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BUREAU OF LABOR STATISTICS**

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MONTHLY REVIEW

OF THE

U. S. BUREAU OF LABOR STATISTICS

VOLUME III—DECEMBER, 1916—NUMBER 6



**WASHINGTON
GOVERNMENT PRINTING OFFICE
1916**

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

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MONTHLY REVIEW

NO. 100

U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

VOLUME III—DECEMBER, 1914—NUMBER 6



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GOVERNMENT PRINTING OFFICE
1914

CONTENTS.

	Page.
Conciliation work of the Department of Labor.....	1, 2
Federal employment work of the Department of Labor, August and September, 1916.....	2-4
Work of State and municipal employment bureaus in the United States, and of provincial employment bureaus in Canada.....	5-8
Employment in selected industries in October, 1916.....	9-12
Strikes and lockouts, January to October.....	12-15
Canadian industrial disputes investigation act in operation.....	16-19
Proposed changes in Canadian industrial disputes investigation act.....	19, 20
Retail prices of food in the United States in September and October.....	20-22
Report on the Montana workmen's compensation act.....	22-26
Accidents in the gas industry.....	26, 27
Workmen's compensation cases in the United States Supreme Court.....	27, 28
Demand for extension of State workmen's compensation laws to cover painters, decorators, and paper hangers.....	28, 29
Industrial hygiene at the meeting of the American Public Health Association.....	29-31
Determination of consequences of industrial accidents in Austria, by Ferdinand Schnitzler.....	31-67
Revision of industrial accident and sickness insurance laws of Norway.....	68-71
Workmen's compensation law in Japan.....	71
Legal regulation of welfare work in Great Britain.....	71-74
Value of welfare supervision to the employer.....	74-81
Welfare work in Great Britain.....	81-88
Women's war work in Great Britain.....	88-92
Juvenile employment in Great Britain.....	92-97
Some new studies of industrial fatigue.....	97-105
Output in relation to hours of work.....	105-120
Report of Chief Inspector of Factories and Workshops of Great Britain.....	121-123
Immigration in September, 1916.....	123, 124
List of employers who have established some form of disability benefit fund...	125-134
Official publications relating to labor:	
United States.....	135-137
Foreign countries.....	138-141
Unofficial publications relating to labor.....	141-147

MONTHLY REVIEW

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VOL. III—NO. 6

WASHINGTON

DECEMBER, 1916

CONCILIATION WORK OF THE DEPARTMENT OF LABOR, OCTOBER 16 TO NOVEMBER 15, 1916.

Under the organic act of the department, which gives the Secretary of Labor the authority to mediate in labor disputes through the appointment, in his discretion, of commissioners of conciliation, the Secretary exercised his good offices between October 16 and November 15 in 11 labor disputes. The companies involved, the number of employees affected, and the results secured, so far as information is available, were as follows:

NUMBER OF LABOR DISPUTES HANDLED BY THE DEPARTMENT OF LABOR THROUGH ITS COMMISSIONERS OF CONCILIATION, OCT. 16 TO NOV. 15, 1916.

Name.	Workmen affected.		Result.
	Directly.	Indirectly.	
Strike, Standard Oil Co. and other oil companies, Bayonne, N. J.....			Adjusted.
Strike, New York Mills, near Utica, N. Y.....	2,700		Do.
Strike of chain welders, York, Pa.....	250	550	Do.
Strike, Hightstown Rug Co., Hightstown, N. J....	25		Pending. ¹
Strike of machinists, Duplex Printing Press Co., Battle Creek, Mich..			Pending.
Strike, Phoenix Hosiery Co., Milwaukee, Wis.....			Do.
Strike, Holeproof Hosiery Co., Milwaukee, Wis.....			Do.
Strike of machinists, Carolina, Clinchfield & Ohio Railway Co., Erwin, Tenn.			Do.
Labor dispute, Arizona Copper Co., Clifton, Ariz.....			Do.
Controversy between Great Northern R. R. Co. and its carmen, St. Paul, Minn.			Do.
Lockout, Indianapolis Street Ry. Co.....			Do.

¹ Information received on Oct. 27 states that strikers have returned to work, pending negotiations for settlement.

Cases noted in previous issues of the REVIEW as pending have been disposed of as follows:

Strike of iron miners, Mesabi region, Minnesota; adjusted.
Strike of street railway employees, Harrisburg, Pa.; unable to adjust.
Strike of milk delivery drivers, St. Louis, Mo.; pending (1 dairy signed up).
Controversy between Coal & Coke Railway Co. and shop employees, Elkins, W. Va.; adjusted.

Strike of shingle weavers, Everett, Wash.; adjusted.

Strike of pattern makers, Detroit, Mich.; adjusted.

Lockout, Southern Saddlery Co., Chattanooga, Tenn.; unable to adjust.

FEDERAL EMPLOYMENT WORK OF THE DEPARTMENT OF LABOR.

During September, 1916, the Division of Information of the Bureau of Immigration of the Department of Labor placed 17,169 persons in employment as compared with 16,313 during August, 1916. The operations of the different offices throughout the country, by months, since May, 1915, when fuller reports began to be made, are contained in the statement following:

OPERATIONS OF THE DIVISION OF INFORMATION, BUREAU OF IMMIGRATION DURING THE MONTHS OF MAY, 1915, TO SEPTEMBER, 1916.

Year and month.	Number of applications for help.	Number of persons applied for.	Number of applicants for places.	Number referred to employment.	Number actually employed.
1915.					
May.....	638	3,826	12,132	3,752	3,495
June.....	1,249	3,601	14,530	5,131	4,646
July.....	1,160	8,665	18,061	6,360	6,035
August.....	1,279	7,931	17,827	7,321	6,757
September.....	1,201	4,551	13,334	5,671	5,405
October.....	1,104	5,423	12,215	5,460	5,006
November.....	847	4,650	11,908	4,459	4,146
December.....	698	3,588	11,902	2,622	2,170
1916.					
January.....	933	5,063	15,015	4,300	3,419
February.....	1,423	6,413	14,257	5,036	4,185
March.....	3,443	10,209	19,484	8,113	7,030
April.....	3,805	12,104	13,498	8,843	7,653
May.....	4,918	21,326	17,614	12,938	11,453
June.....	4,826	17,402	18,824	13,839	11,960
July.....	5,488	23,657	24,058	17,608	16,309
August.....	6,420	26,791	23,720	18,062	16,313
September.....	8,312	27,185	26,276	19,643	17,169

The following statement of the work of the 18 different zones covering the whole country gives details for August and September, 1916:

SUMMARY OF ACTIVITIES OF UNITED STATES EMPLOYMENT SERVICE FOR THE MONTHS OF AUGUST AND SEPTEMBER, 1916.

Zone number and office.	Opportunities received.				Applications for employment.					
	Applications for help.		Persons applied for.		Applications received.		Referred to employment.		Number actually employed.	
	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.
1. Boston, Mass.....	3	.....	1,640	.....	54	51	12	.....	12	.....
2. New York, N. Y.....	231	162	1,303	635	1,692	2,195	579	347	550	328
Buffalo, N. Y.....	115	147	815	1,032	839	1,002	787	971	634	859
Total.....	346	309	2,118	1,667	2,531	3,197	1,366	1,318	1,184	1,187
2a. Newark, N. J. ¹.....	.....	1,237	.....	1,643	.....	2,978	.....	1,712	.....	1,317
Jersey City, N. J.....	.....	12	.....	407	.....	173	.....	125	.....	107
Total.....	.....	1,249	.....	2,050	.....	3,151	.....	1,837	.....	1,424
3. Philadelphia, Pa.....	77	81	1,328	131	257	144	246	174	209	115
Pittsburgh, Pa.....	24	28	425	590	809	757	491	495	463	461
Wilmington, Del.....	19	16	338	108	52	61	48	49	40	46
Total.....	120	125	2,091	829	1,118	962	785	718	712	622
4. Baltimore, Md.....	53	59	217	90	161	163	145	106	145	106
5. Norfolk, Va.....	13	9	50	18	222	71	75	32	60	23
6. Jacksonville, Fla.....	.....	16	.....	110	511	37	198	.....	198	.....
Miami, Fla.....	3	9	3	35	38	67	3	35	1	30
Savannah, Ga.....	1	3	1	40	187	236	1	38	1	38
Charleston, S. C.....	2	.....	11	.....	12	31	83	127	83	127
Mobile, Ala.....	.....	.....	.....	.....	2	8	.....	.....	.....	.....
Total.....	6	28	15	185	750	379	285	200	283	195
7. New Orleans, La.....	30	50	42	1,078	390	500	50	173	33	27
Gulfport, Miss.....	1	1	1	300	60	59	6	.....	.....	.....
Memphis, Tenn.....	4	5	6	523	49	104	.....	37	.....	37
Total.....	35	56	49	1,901	499	663	56	210	33	64
8. Galveston, Tex.....	6	1	8	1	40	28	8	7	4	6
Houston, Tex.....	3	4	6	11	14	17	3	2	3	2
Amarillo, Tex.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Eagle Pass, Tex.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....
El Paso, Tex.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Albuquerque, N. Mex.....	.....	.....	.....	.....	2	2	.....	.....	.....	.....
Total.....	9	5	14	12	58	47	12	9	7	8
9. Cleveland, Ohio.....	10	4	15	36	101	111	96	96	13	26
10. Chicago, Ill.....	252	559	1,709	1,855	1,634	1,677	1,619	1,574	1,592	1,524
Detroit, Mich.....	241	331	1,256	971	1,066	688	1,066	688	1,062	673
Sault Ste. Marie, Mich.....	9	7	120	1,033	88	50	89	36	89	36
Indianapolis, Ind.....	68	90	721	653	654	660	490	574	417	542
Total.....	570	987	3,806	4,512	3,442	3,075	3,264	2,872	3,160	2,775
11. Minneapolis, Minn.....	55	26	70	43	260	36	49	12	49	12
12. St. Louis, Mo.....	215	170	550	1,030	392	382	320	399	302	384
Kansas City, Mo.....	558	677	1,142	1,524	1,012	1,339	1,032	1,403	833	1,077
Total.....	773	847	1,692	2,554	1,404	1,721	1,352	1,802	1,135	1,461
13. Denver, Colo.....	2	4	2	6	20	26	10	7	2	3
14. Helena, Mont.....	8	4	18	4	18	11	8	3	6	3
Moscow, Idaho.....	.....	5	.....	5	4	5	4	5	4	5
Total.....	8	9	18	9	22	16	12	8	10	8

¹ Tentative assignment as a zone, pending permanent organization as a zone.

4 MONTHLY REVIEW OF THE BUREAU OF LABOR STATISTICS.

SUMMARY OF ACTIVITIES OF UNITED STATES EMPLOYMENT SERVICE FOR THE MONTHS OF AUGUST AND SEPTEMBER, 1916—Concluded.

Zone number and office.	Opportunities received.				Applications for employment.					
	Applications for help.		Persons applied for.		Applications received.		Referred to employment.		Number actually employed.	
	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.
15. Seattle, Wash.....	135	169	880	825	957	1,092	402	357	354	319
Aberdeen, Wash.....	25	14	180	300	378	329	180	101	172	101
Bellingham, Wash.....	22	17	35	39	66	58	42	25	34	21
Colfax, Wash.....	246	9	522	23	375	18	365	81	365	81
Everett, Wash.....	59	12	785	98	10	4	8	3	6	2
North Yakima, Wash.....	850	821	1,838	2,505	1,766	1,864	1,575	1,712	1,451	1,549
Spokane, Wash.....	109	99	605	258	712	792	605	258	595	246
Tacoma, Wash.....	442	686	1,150	1,333	1,325	1,084	1,028	1,267	1,018	1,252
Walla Walla, Wash.....	213	164	400	278	316	235	285	164	276	152
Sumner, Wash.....										
Puyallup, Wash.....										
Wenatchee, Wash.....		113		405		364		328		328
Total.....	2,101	2,104	6,395	6,064	5,905	5,840	4,490	4,296	4,271	4,051
16. Portland, Oreg.....	1,439	1,556	3,269	5,177	2,627	4,017	2,378	3,963	2,262	3,755
Astoria, Oreg.....	25	31	170	276	171	283	140	124	104	119
Total.....	1,464	1,587	3,439	5,453	2,798	4,300	2,518	4,087	2,366	3,874
17. San Francisco, Cal.....	425	394	817	763	1,330	1,314	807	865	321	401
Reno, Nev.....		75		263		303		252		237
Total.....	425	469	817	1,026	1,330	1,617	807	1,117	321	638
18. Los Angeles, Cal.....	1	4	1	17	149	93	1	18	1	17
San Diego, Cal.....	348	431	651	713	1,035	757	866	898	688	675
Total.....	349	435	652	730	1,184	850	867	916	689	692
Harvest hands.....	178		13,691		1,861		1,861		1,861	
Grand total.....	6,420	8,312	26,791	27,185	23,720	26,276	18,062	19,643	16,313	17,169

¹ Through Hudson, S. Dak., branch of Minneapolis office. Figures for entire season.

The above data do not include the activities of the United States Employment Service in cooperation with State and city employment offices. The data relating thereto are shown in the following table:

ACTIVITIES OF THE UNITED STATES EMPLOYMENT SERVICE IN COOPERATION WITH STATE AND MUNICIPAL EMPLOYMENT OFFICES, SEPTEMBER, 1916.

Office.	Opportunities received.		Applications for employment.		
	Applications for help.	Persons applied for.	Applications received.	Referred to employment.	Number actually employed.
New York, N. Y., in cooperation with—					
State office.....	1,335	1,911	1,081	2,025	1,185
City office.....	2,167	2,530	2,163	3,486	2,053
Buffalo, N. Y., in cooperation with State office.....	982	750	1,261	1,831	562
Total.....	4,484	5,191	4,505	7,342	3,800

WORK OF STATE AND MUNICIPAL EMPLOYMENT BUREAUS IN THE UNITED STATES AND OF PROVINCIAL EMPLOYMENT BUREAUS IN CANADA.

In the following table data are presented for October, 1915, and October, 1916, relative to the operations of public employment offices. Information is given for the United States for State employment bureaus in 12 States, municipal employment bureaus in 8 States, State-city employment bureaus in 2 States, and a city-private employment bureau in 1 State. Figures are also furnished for 2 Canadian employment bureaus.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, OCTOBER, 1915 AND 1916.

UNITED STATES.

State and city.	Applications from employers.	Persons asked for by employers.	Persons applying for work.		Persons referred to positions.	Positions filled.
			New registrations.	Renewals.		
California (municipal):						
Berkeley—						
October, 1915.....	158	177	74	442	177	177
October, 1916.....	237	257	62	28	242	242
Sacramento—						
October, 1915.....	(1)	416	72	(1)	416	416
October, 1916.....	(1)	336	65	(1)	336	336
California (State-city):						
Los Angeles ² —						
October, 1915.....	(1)	(1)	2,142	(1)	4,158	4,029
October, 1916.....	3,337	5,565	2,305	(1)	5,365	4,852
California (State):						
Oakland—						
October, 1916.....	578	965	502	375	1,003	713
Sacramento—						
October, 1916.....	428	1,310	791	361	1,104	1,032
San Francisco—						
October, 1916.....	1,264	3,114	2,713	1,041	2,880	2,178
Total:						
October, 1915.....					4,751	4,622
October, 1916.....					10,930	9,353
Connecticut (State):						
Bridgeport—						
October, 1915.....	427	(1)	(1)	(1)	(1)	369
October, 1916.....	822	(1)	(1)	(1)	(1)	739
Hartford—						
October, 1915.....	724	(1)	(1)	(1)	(1)	550
October, 1916.....	1,272	(1)	(1)	(1)	(1)	947
New Haven—						
October, 1915.....	365	(1)	(1)	(1)	(1)	264
October, 1916.....	1,072	(1)	(1)	(1)	(1)	868
Norwich—						
October, 1915.....	144	(1)	(1)	(1)	(1)	130
October, 1916.....	180	(1)	(1)	(1)	(1)	170
Waterbury—						
October, 1915.....	233	(1)	(1)	(1)	(1)	172
October, 1916.....	154	(1)	(1)	(1)	(1)	111
Total:						
October, 1915.....						1,485
October, 1916.....						2,835
Illinois (municipal):						
Chicago—						
October, 1916.....	23	333	200	(1)	333	149

¹ Not reported.

² Includes Los Angeles district, 8 counties.

³ Including data for State employment offices, which were not established until January, 1916.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, OCTOBER, 1915 AND 1916—Contd.

UNITED STATES—Continued.

State and city.	Applica- tions from employ- ers.	Persons asked for by em- ployers.	Persons applying for work.		Persons referred to positions.	Positions filled.
			New reg- istrations.	Renew- als.		
Indiana (State):						
Fort Wayne—						
October, 1915.....	324	497	360	88	448	432
October, 1916.....	308	510	339	80	419	401
South Bend—						
October, 1915.....	313	916	441	120	422	339
October, 1916.....	328	1,074	427	90	481	407
Total—						
October, 1915.....					870	771
October, 1916.....					900	808
Iowa (State):						
Des Moines—						
October, 1916.....	60	317	136	19	138	69
Kansas (State):						
Topeka—						
October, 1915.....	12	73	41	12	33	27
October, 1916.....	19	118	73	(1)	60	59
Kentucky (city-private):						
Louisville—						
October, 1915.....	(1)	128	496	1,022	122	78
October, 1916.....	(1)	285	332	705	290	128
Kentucky (State):						
Louisville—						
October, 1915.....	42	42			227	42
October, 1916.....	687	687			873	873
Total—						
October, 1915.....					349	120
October, 1916.....					1,163	1,001
Massachusetts (State):						
Boston—						
October, 1915.....	1,683	2,116	2 1,243	(1)	2 3,443	1,675
October, 1916.....	2,497	2,728	2 1,485	(1)	2 3,721	1,593
Fall River—						
October, 1915.....	102	107	2 27	(1)	2 98	85
October, 1916.....	179	188	2 16	(1)	2 155	149
Springfield—						
October, 1915.....	609	791	2 277	(1)	2 993	670
October, 1916.....	1,067	1,500	2 516	(1)	2 1,673	1,117
Worcester—						
October, 1915.....	643	804	2 484	(1)	2 1,041	529
October, 1916.....	1,005	1,301	2 608	(1)	2 1,407	713
Total—						
October, 1915.....					2 5,575	2,959
October, 1916.....					2 6,956	3,572
Michigan (State):						
Battle Creek—						
October, 1916.....	96	192	154	(1)	143	143
Bay City—						
October, 1916.....	38	120	84	(1)	84	84
Detroit—						
October, 1915.....	(1)	(1)	(1)	(1)	4,608	4,608
October, 1916.....	510	6,531	(1)	(1)	5,992	5,992
Flint—						
October, 1915.....	(1)	(1)	(1)	(1)	548	548
October, 1916.....	86	886	771	(1)	771	771
Grand Rapids—						
October, 1915.....	(1)	(1)	(1)	(1)	1,138	1,138
October, 1916.....	476	896	891	(1)	872	872
Jackson—						
October, 1915.....	(1)	(1)	(1)	(1)	784	784
October, 1916.....	359	828	838	(1)	810	794
Kalamazoo—						
October, 1915.....	(1)	(1)	(1)	(1)	453	453
October, 1916.....	305	460	430	(1)	415	415
Lansing—						
October, 1916.....	96	275	262	(1)	246	246

1 Not reported.

2 Number who were registered.

3 Number of offers of positions.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, OCTOBER, 1915 AND 1916—Contd.

UNITED STATES—Continued.

State and city.	Applica- tions from employ- ers.	Persons asked for by em- ployers.	Persons applying for work.		Persons referred to positions.	Positions filled.
			New reg- istrations.	Renew- als.		
Michigan (State)—Concluded.						
Muskegon—						
October, 1916.....	60	230	235	(1)	222	205
Saginaw—						
October, 1915.....	(1)	(1)	(1)	(1)	990	990
October, 1916.....	183	946	790	(1)	790	790
Total—						
October, 1915.....					8,521	8,521
October, 1916.....					10,345	10,312
Minnesota (State):						
Duluth—						
October, 1915.....	(1)	(1)	(1)	(1)	(1)	1,162
October, 1916.....	(1)	(1)	(1)	(1)	(1)	1,379
Minneapolis—						
October, 1915.....	(1)	(1)	(1)	(1)	(1)	2,625
October, 1916.....	(1)	(1)	(1)	(1)	(1)	2,573
St. Paul—						
October, 1915.....	(1)	(1)	(1)	(1)	(1)	1,492
October, 1916.....	(1)	(1)	(1)	(1)	(1)	1,586
Total—						
October, 1915.....					(1)	5,279
October, 1916.....					(1)	5,538
Montana (municipal):						
Butte—						
October, 1915.....	558	245	550	(1)	560	345
October, 1916.....	606	380	640	(1)	400	394
New York (municipal):						
October, 1915.....	830	977	2,509	(1)	1,864	744
October, 1916.....	2,977	3,304	2,528	(1)	4,311	2,138
New York (State):						
Albany—						
October, 1915.....	282	355	666	220	579	265
October, 1916.....	570	838	600	272	939	516
Brooklyn—						
October, 1915.....	774	1,356	1,668	593	1,739	723
October, 1916.....	1,757	2,495	1,325	598	2,694	1,601
Buffalo—						
October, 1915.....	756	756	682	193	784	508
October, 1916.....	1,067	2,118	1,605	104	2,118	2,134
Rochester—						
October, 1915.....	832	1,477	816	72	1,373	936
October, 1916.....	1,608	2,262	945	343	1,896	1,183
Syracuse—						
October, 1915.....	621	964	831	65	969	671
October, 1916.....	926	1,293	579	123	1,029	790
Total—						
October, 1915.....					7,308	3,847
October, 1916.....					12,987	8,362
Ohio (State-city):						
Akron—						
October, 1915.....	(1)	1,658	1,001	1,491	1,452	1,216
October, 1916.....	(1)	2,063	780	1,401	1,629	1,382
Cincinnati—						
October, 1915.....	(1)	1,346	2,130	3,645	1,407	1,154
October, 1916.....	(1)	1,819	1,342	2,382	1,983	1,078
Cleveland—						
October, 1915.....	(1)	7,161	2,448	5,990	5,144	4,311
October, 1916.....	(1)	8,184	2,961	7,571	7,232	5,969
Columbus—						
October, 1915.....	(1)	2,050	911	2,073	1,978	1,708
October, 1916.....	(1)	2,673	896	2,590	2,290	1,872
Dayton—						
October, 1915.....	(1)	1,182	960	1,302	1,093	972
October, 1916.....	(1)	1,138	640	905	910	813
Toledo—						
October, 1915.....	(1)	3,951	1,898	2,185	2,921	2,685
October, 1916.....	(1)	4,898	1,762	2,570	3,093	2,640

¹ Not reported.² Exclusive of offices at Battle Creek, Bay City, Lansing, and Muskegon, opened since October, 1915.

8 MONTHLY REVIEW OF THE BUREAU OF LABOR STATISTICS.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, OCTOBER, 1915 AND 1916—Concl'd.

UNITED STATES—Concluded.

State and city.	Applica- tions from employ- ers.	Persons asked for by em- ployers.	Persons applying for work.		Persons referred to positions.	Positions filled.
			New reg- istrations.	Renew- als.		
Ohio (State-city)—Concluded.						
Youngstown—						
October, 1915.....	(1)	1,446	929	1,028	1,004	881
October, 1916.....	(1)	1,198	625	1,089	1,123	971
Total—						
October, 1915.....					14,999	12,927
October, 1916.....					18,260	14,725
Oregon (municipal):						
Portland—						
October, 1916.....	(1)	4,200	2,148	(1)	(1)	3,886
Pennsylvania (State):						
Altoona—						
October, 1916.....	(1)	67	16	6	26	25
Harrisburg—						
October, 1916.....	(1)	437	240	77	222	192
Johnstown—						
October, 1916.....	(1)	180	50	10	55	46
Philadelphia—						
October, 1916.....	(1)	1,186	806	511	1,121	946
Pittsburgh—						
October, 1916.....	(1)	789	700	143	544	479
Total—						
October, 1916.....					1,968	1,688
Virginia (municipal):						
Richmond—						
October, 1915.....	253	514	671	(1)	468	181
October, 1916.....	270	403	434	(1)	535	225
Washington (Federal-municipal):						
Tacoma ² —						
Washington (municipal):						
Everett—						
October, 1915.....	(1)	(1)	(1)	(1)	(1)	231
October, 1916.....	(1)	740	(1)	(1)	(1)	516
Seattle—						
October, 1915.....	1,914	2,332	(1)	(1)	2,472	2,121
October, 1916.....	3,561	6,646	(1)	(1)	6,593	6,203
Spokane—						
October, 1915.....	(1)	(1)	(1)	(1)	964	841
October, 1916.....	2,932	4,275			3,986	3,935
Total—						
October, 1915.....					(1)	3,193
October, 1916.....					(1)	10,654
Rhode Island (State):						
Providence—						
October, 1915.....	264	334	240	117	(1)	334
October, 1916.....	256	279	141	95	(1)	279
Texas (municipal):						
Dallas—						
October, 1915.....	165	308	53	2	308	308
October, 1916.....	272	502	49	6	536	456
Fort Worth—						
October, 1915.....	132	287	² 566	(1)	305	269
October, 1916.....	149	417	(1)	(1)	299	283
Total—						
October, 1915.....					613	577
October, 1916.....					835	739
Quebec (Province):						
Montreal—						
October, 1916.....	337	870	³ 492	(1)	510	432
Quebec—						
October, 1915.....	(1)	124	³ 208	(1)	(1)	109
October, 1916.....	(1)	322	³ 140	(1)	(1)	122
Total—						
October, 1915.....					(1)	109
October, 1916.....					(1)	554

¹ Not reported.

² Figures for this office are carried regularly in the REVIEW under the subject "Federal employment work of the Department of Labor," to which the reader is referred.

³ Number applying for work.

EMPLOYMENT IN SELECTED INDUSTRIES IN OCTOBER, 1916.

Continuing the current statistics that have appeared in the MONTHLY REVIEW for a year past, figures are here given indicating the change in the volume of employment in manufacturing establishments in the United States in October, 1916, as compared with the same month in the preceding year and as compared with the preceding month. The figures are compiled from returns from representative establishments throughout the country. Four tables are presented, two relating to the number of employees on the pay roll and the amount of the pay roll, and two presenting the number of employees actually working on a specified day, namely, the last full-length working day of the pay-roll period reported.

The comparison with a year ago continues exceedingly favorable. The first table shows that in 8 of the 10 industries represented the number of employees on the pay roll was greater in October, 1916, than in October, 1915. As was the case last month in the September comparison, the two industries showing a reduction are cotton manufacturing and cigar manufacturing, while the industry showing the greatest increase in the year interval is again iron and steel. The amount of money paid to employees was greater in all of the 10 industries in October, 1916, than in October, 1915. The greatest increase reported is 48.7 per cent for iron and steel.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS IN OCTOBER, 1915, AND OCTOBER, 1916.

Industry.	Establishments to which inquiries were sent.	Establishments reporting for October both years.	Period of pay roll.	Number on pay roll in October—		Per cent of increase (+) or decrease (-).	Amount of pay roll in October—		Per cent of increase (+) or decrease (-).
				1915	1916		1915	1916	
Boots and shoes.....	85	65	1 week..	47,180	51,590	+ 9.3	\$585,814	\$648,856	+10.8
Cotton manufacturing..	89	53	...do....	52,406	51,286	- 2.1	417,630	486,573	+16.5
Cotton finishing.....	19	16	...do....	13,322	13,653	+ 2.5	144,299	172,093	+19.3
Hosiery and underwear.	82	60	...do....	30,711	32,608	+ 6.2	276,633	316,468	+14.4
Woolen.....	56	44	...do....	39,557	40,683	+ 2.8	355,521	466,888	+31.3
Silk.....	64	46	2 weeks..	18,283	19,439	+ 6.3	390,904	451,982	+15.6
Men's ready-made clothing.....	83	39	1 week..	21,323	24,231	+13.6	267,476	325,237	+21.6
Iron and steel.....	142	92	½ month	130,071	154,418	+18.7	4,226,304	6,283,242	+48.7
Car building and repairing.....	80	42	...do....	55,632	62,346	+12.1	1,648,783	1,999,897	+21.3
Cigar manufacturing....	107	59	1 week..	20,656	19,065	- 7.7	209,194	214,836	+ 2.7

Returns as to the number of employees working on the last full-time day of the reported pay period were made by only a part of the firms reporting the other items. The comparable figures for October, 1915, and October, 1916, appear in the next table.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS ON LAST FULL DAY'S OPERATION IN OCTOBER, 1915, AND OCTOBER, 1916.

Industry.	Estab- lishments reporting for Octo- ber both years.	Period of pay roll.	Number actually work- ing on last full day of reported pay period in October—		Per cent of increase (+) or de- crease (-).
			1915	1916	
Boots and shoes.....	17	1 week.....	13,435	12,751	- 5.1
Cotton manufacturing.....	29	do.....	19,399	18,995	- 2.1
Cotton finishing.....	11	do.....	6,981	7,055	+ 1.1
Hosiery and underwear.....	17	do.....	11,796	12,034	+ 2.0
Woolen.....	41	do.....	29,961	31,258	+ 4.7
Silk.....	36	2 weeks.....	11,706	12,525	+ 7.0
Men's ready-made clothing.....	13	1 week.....	3,226	3,276	+ 1.5
Iron and steel.....	78	½ month.....	103,704	126,162	+21.7
Car building and repairing.....	41	do.....	48,708	53,825	+10.5
Cigar manufacturing.....	37	1 week.....	10,460	9,347	-10.6

Comparing October, 1916, with September, 1916, the figures of the next table show that 7 of the 10 industries added to the number on their pay rolls. The three exceptions were cotton manufacturing, men's ready-made clothing, and iron and steel. The reduction in cotton manufacturing and in iron and steel is very slight. More money was paid to employees in October, 1916, than in September, 1916, in all of the listed industries except cotton manufacturing, woolen, and men's ready-made clothing. The greatest reduction reported is 4.3 per cent in the men's ready-made clothing industry, an expected seasonal reduction. The greatest increase is 4.8 per cent, reported for both silk and car building and repairing.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS IN SEPTEMBER, 1916, AND OCTOBER, 1916.

Industry.	Estab- lish- ments to which in- quiries were sent.	Estab- lish- ments report- ing for Sep- tember and Oc- tober.	Period of pay roll.	Number on pay roll in—		Per cent of increase (+) or de- crease (-).	Amount of pay roll in—		Per cent of in- crease (+) or de- crease (-).
				Sep- tember, 1916.	Octo- ber, 1916.		Sep- tember, 1916.	October, 1916.	
Boots and shoes.....	85	62	1 week...	48,501	48,591	+0.2	621,614	623,245	+0.3
Cotton manufacturing..	89	50	do.....	50,726	50,714	- (1)	494,375	474,061	-4.1
Cotton finishing.....	19	15	do.....	11,078	11,099	+0.2	131,062	132,990	+1.5
Hosiery and underwear..	82	55	do.....	30,007	30,540	+1.8	290,009	300,025	+3.5
Woolen.....	56	44	do.....	40,119	40,724	+1.5	481,678	468,040	-2.8
Silk.....	64	44	2 weeks..	20,234	20,305	+0.4	456,627	478,450	+4.8
Men's ready-made cloth- ing.....	83	33	1 week...	22,224	21,633	-2.7	306,713	293,576	-4.3
Iron and steel.....	142	93	½ month..	153,067	152,810	-0.2	5,969,156	6,191,082	+3.7
Car building and repair- ing.....	80	35	do.....	57,339	57,966	+1.1	1,791,819	1,877,636	+4.8
Cigar manufacturing....	107	51	1 week...	16,272	16,635	+2.2	186,687	189,165	+1.3

¹ Less than one-tenth of 1 per cent.

In all of the industries named, except cotton finishing and men's ready-made clothing, more employees are reported as actually work-

ing on the last full day of the reported pay period in October, 1916, than in September, 1916. The figures for such establishments as reported this item are given in the table following:

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS ON LAST FULL DAY'S OPERATION IN SEPTEMBER, 1916, AND OCTOBER, 1916.

Industry.	Estab- lish- ments re- porting for Sep- tember and October.	Period of pay roll.	Number actually working on last full day of reported pay period in—		Per cent of in- crease (+) or decrease (-).
			September, 1916.	October, 1916.	
Boots and shoes.....	20	1 week.....	12,637	12,830	+1.5
Cotton manufacturing.....	30	do.....	20,480	20,956	+2.3
Cotton finishing.....	10	do.....	6,731	6,717	-.2
Hosiery and underwear.....	15	do.....	11,302	11,593	+2.6
Woolen.....	41	do.....	30,681	31,345	+2.2
Silk.....	35	2 weeks.....	13,409	13,499	+.7
Men's ready-made clothing.....	7	1 week.....	921	876	-4.9
Iron and steel.....	88	½ month.....	128,700	130,328	+1.3
Car building and repairing.....	34	do.....	48,920	49,665	+1.5
Cigar manufacturing.....	34	1 week.....	8,802	8,997	+2.2

RECENT CHANGES IN WAGE RATES.

The answers furnished by correspondents as to changes in wage rates in their establishments in the period September 15 to October 15, 1916, indicate that such changes have been few. In the many instances where no definite reply was received, it is probably safe to assume that no change in rates was made.

In cotton manufacturing increases are reported by 4 southern mills. One mill reports an increase of 5 per cent to the entire force, while the other 3 mills report an increase of 10 per cent, but do not state what proportion of the force received the increase. In cotton finishing slight increases are reported to a few employees in each of 2 mills. Increases are reported, mostly in special occupations, by five hosiery and underwear mills. In the silk industry an increase of 10 per cent to all employees is reported by 1 mill; increases to a portion of the force are reported by 3 other mills. In the woolen industry the only increase reported is one averaging 5 per cent to a little less than one-sixth of the force in 1 mill, all of those receiving such increase being females. Two establishments in the boot and shoe industry report increases in rates. In one case the increase was 5 per cent to all, and in the other instance the increase was made only in certain occupations. In the men's ready-made clothing industry 3 establishments report an increase of 10 per cent to a portion of the force, while 1 of these 3 also reports an increase of 5 per cent to another group of its employees. Only 1 increase—7 per cent to certain time-rate workers—is reported in the industry of car build-

ing and repairing. In cigar manufacturing 1 establishment reports an increase of 10 per cent to 61 per cent of the force, and another a very slight increase as affecting its entire pay roll. In the iron and steel industry there was an increase of from 3 to 5 per cent to all employees in 5 plants and an increase of 7 per cent to all in 6 plants. Six and one-tenth per cent increase to all is reported by 1 plant; another reports an increase of $7\frac{1}{4}$ per cent to one-third of the force, and an increase of 5 per cent to the other two-thirds; $7\frac{1}{4}$ per cent to one-fourth of the force and 5 per cent to the other three-fourths is reported by 1 establishment. Two establishments report an increase of 10 per cent; in one case the 10 per cent increase is general, while in the other the proportion of the force receiving it is not stated.

STRIKES AND LOCKOUTS, JANUARY TO OCTOBER.

According to data compiled from various sources by the United States Bureau of Labor Statistics, the number of strikes and lockouts during the first 10 months of the year 1916 was 2,890. The number similarly compiled during the corresponding months of the year 1915 was 1,025.

The following table shows the number of strikes and lockouts begun in each of the months of 1916, together with 261 strikes and lockouts reported as having occurred during the 10-month period, although the month in which they began was not reported. The number of strikes compiled during the corresponding months of the year 1915 is also given. In comparing these figures, it must be borne in mind that, although the number of strikes in 1916 has undoubtedly been larger than those of the corresponding months of 1915, the sources of the bureau in obtaining data in regard to strikes have also increased, and the difference between the 2 years is therefore not so great as the figures would tend to show. The strikes and lockouts were distributed as follows:

NUMBER OF STRIKES AND LOCKOUTS BEGINNING IN EACH MONTH, JANUARY TO OCTOBER, INCLUSIVE, 1916 AND 1915.

Kind of dispute.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Month not stated.	Total.
Strikes:												
1916.....	149	163	218	322	500	263	262	263	209	189	244	2,782
1915.....	50	45	75	91	111	54	95	138	147	102	.....	908
Lockouts:												
1916.....	7	5	8	13	15	15	3	9	12	4	17	108
1915.....	13	12	14	16	11	6	14	9	15	7	.....	117
Total:												
1916..	156	168	226	335	515	278	265	272	221	193	261	2,890
1915..	63	57	89	107	122	60	109	147	162	109	.....	1,025

The above columns include disputes that began in the month indicated only and are subject to monthly revision. More detailed accounts of the disputes reported for each month preceding October may be found in former numbers of the REVIEW.

DISPUTES REPORTED DURING OCTOBER, 1916.

The number of strikes reported during October shows a decrease in the number reported during any of the preceding six months. Probably the strikes that attracted the most attention were those of the street-car men in New York City and of the employees of the Standard Oil Co. at Bayonne. Other strikes of prominence were those of the miners in Pennsylvania, Oklahoma, and Michigan; the machinists in St. Louis, New York City, Boston, Baltimore, Portland, and Wilmington; the tailors of Minneapolis, St. Paul, and Cincinnati; the tobacco workers and stevedores of Porto Rico; the street-car men and dredgers of the Canal Zone; the street-car men at Albany and Springfield (Mo.); the ironworkers at San Francisco; the shipbuilders at Elizabeth (N. J.); the molders at Rochester (N. Y.); and the messenger boys, window cleaners, grocery clerks, cigar makers, neckwear makers, macaroni workers, and the hod carriers in New York City.

The data in the following table relates to 334 strikes and lockouts concerning which information was received by the bureau during the month of October. These include, in addition to the 193 strikes and lockouts which began in October, 132 strikes and 9 lockouts which were reported during October but began as follows: 59 strikes and 3 lockouts in September; 11 strikes and 3 lockouts in August; 5 strikes and 1 lockout in July; 6 strikes in June; 4 strikes in May; 8 strikes in April; 4 strikes in March; 4 strikes in February; 2 strikes in January; and 29 strikes and 2 lockouts the dates of commencement of which were not reported, but most of which probably occurred in September or October. Inasmuch as strikes which start toward the end of a month frequently do not come to the attention of the bureau until after the report for the month has been prepared, it is probable that corrected figures for September will show an increase over the number of strikes herein reported for that month.

Of the disputes reported during October, 24 strikes and 4 lockouts occurred east of the Mississippi and south of the Ohio and Potomac Rivers, 84 strikes and 2 lockouts west of the Mississippi, and the remaining 213 strikes and 7 lockouts in the district north of the Ohio and Potomac Rivers and east of the Mississippi. Nearly one-half of these strikes occurred in five States.

14 MONTHLY REVIEW OF THE BUREAU OF LABOR STATISTICS.

STATES IN WHICH FOUR OR MORE STRIKES AND LOCKOUTS WERE REPORTED
DURING OCTOBER, 1916.

State.	Strikes.	Lockouts.	Total.
Pennsylvania.....	47	.....	47
New York.....	32	.....	32
Missouri.....	29	.....	29
Massachusetts.....	26	.....	26
Ohio.....	23	2	25
Illinois.....	18	1	19
New Jersey.....	16	2	18
Connecticut.....	17	.....	17
California.....	12	2	14
Indiana.....	8	.....	8
Washington.....	8	.....	8
West Virginia.....	7	1	8
Porto Rico.....	7	.....	7
Texas.....	7	.....	7
Michigan.....	5	1	6
Arkansas.....	5	.....	5
Maine.....	5	.....	5
Delaware.....	4	.....	4
Minnesota.....	4	.....	4
Oklahoma.....	4	.....	4
Oregon.....	4	.....	4
Rhode Island.....	4	.....	4
Wisconsin.....	3	1	4
16 other States.....	26	3	29
Total.....	321	13	334

The strikers were men in all but 15 strikes, which were confined to women; 12 strikes, which included both men and women; and 14 strikes and 1 lockout, in which the sex was not stated.

The industries in which 4 or more strikes and lockouts were reported were as follows:

NUMBER OF STRIKES AND LOCKOUTS IN SPECIFIED INDUSTRIES REPORTED
DURING OCTOBER, 1916.

Industry.	Strikes.	Lockouts.	Total.
Metal trades.....	61	3	64
Miners.....	38	.....	38
Building trades.....	34	.....	34
Clothing.....	16	1	17
Teamsters.....	16	.....	16
Textile workers.....	11	1	12
Street-railway men.....	9	.....	9
Bakers.....	6	2	8
Tobacco workers.....	8	.....	8
Waiters and cooks.....	8	.....	8
Food handlers.....	7	.....	7
Chemical workers.....	6	.....	6
Glassworkers.....	5	1	6
Paper makers.....	5	1	6
Butchers and meat packers.....	5	.....	5
Freight handlers.....	5	.....	5
Longshoremen.....	5	.....	5
Musicians and theater men.....	5	.....	5
Shipbuilders.....	4	.....	4
Steamboat men.....	5	.....	5
Electrical workers.....	3	1	4
Stoneworkers.....	3	1	4
Miscellaneous.....	56	2	58
Total.....	321	13	334

Included in the above are 25 strikes of machinists, 16 of molders, and 6 of weavers.

In 206 strikes and 10 lockouts the employees were connected with unions; in 37 strikes they were not so connected; in 7 strikes and 2

lockouts they were not connected with unions at the time of striking but became organized during the course of the strike; in the remaining 71 strikes and 1 lockout it was not stated whether the men had union affiliation.

The following table shows the causes of 264 strikes and 6 lockouts, 57 strikes and 7 lockouts being due to miscellaneous causes or to causes not reported. In 66 per cent of these the question of wages or hours, or both, was prominent.

PRINCIPAL CAUSES OF STRIKES AND LOCKOUTS REPORTED DURING OCTOBER, 1916.

Cause.	Strikes.	Lockouts.	Total.
For increase of wages.....	96		96
Because of reduction of wages.....	7		7
For decrease of hours.....	9		9
For increase of wages and decrease of hours.....	22		22
General conditions.....	14		14
Conditions and wages.....	10		10
Conditions and hours.....	1		1
Conditions, wages, and hours.....	4		4
Recognition of the union.....	20	3	23
Recognition and wages.....	12		12
Recognition and hours.....	1	1	2
Recognition, wages, and hours.....	5		5
Because of discharge of employees.....	16	1	17
Because of presence of nonunion men.....	23	1	24
In regard to agreement.....	8		8
Sympathy.....	4		4
Want foreman discharged.....	4		4
Jurisdictional.....	2		2
Wages unpaid.....	2		2
Recognition, conditions, and wages.....	4		4
Miscellaneous.....	8	3	11
Not reported.....	49	4	53
Total.....	321	13	334

In 162 of the strikes the number of persons involved was reported to be 83,643, an average of 516 per strike. In 21 strikes, in each of which the number involved was more than 1,000, the strikers numbered 54,900, thus leaving 28,743 involved in the remaining 141 strikes, or an average of 204 in each. In 3 lockouts the number reported to be involved was 42.

In 222 strikes and 10 lockouts only 1 employer was concerned in each disturbance; in 9 strikes, 2 employers; in 4 strikes, 3 employers; in 4 strikes, 4 employers; in 15 strikes and 1 lockout, more than 4; in 67 strikes and 2 lockouts the number of employers was not stated.

In 117 strikes reported as ending in October, 53 were won, 17 were lost, 32 compromised; in 1, the strikers returned to work under promise of the employer to arbitrate the matter in dispute; in 14 strikes the result was not reported. One lockout was reported as won by the employer. The duration of 86 of these strikes was given as follows: 1 day or less, 7; 2 to 3 days, 17; 4 to 7 days, 14; 1 to 2 weeks, 20; 2 to 3 weeks, 7; 3 to 4 weeks, 5; 1 to 2 months, 10; 2 to 3 months, 3; over 3 months, 3. The duration of the 83 strikes lasting less than 3 months was 1,312 days, or an average of 16 days each.

CANADIAN INDUSTRIAL DISPUTES INVESTIGATION ACT IN OPERATION.

The Canadian industrial disputes investigation act applies to coal mines and metal mines, public utilities, including municipal service corporations, and transportation of all kinds, including occupations subsidiary thereto, and makes it unlawful for employers in these industries and occupations to lock out their workmen or for employees to strike until an investigation of the dispute has been made and a report published by a board appointed for the particular case. The purpose of the act is to prevent and not prohibit strikes and lockouts; it does not aim at compulsory arbitration or to force men to work against their will after all chance of amicable settlement has disappeared. After the report of the board has been issued the parties may refuse to accept its findings and start a strike or lockout. This board is appointed, upon application by either side, by the minister of labor or his deputies, and consists of three members, one a representative of the employers, one representing the employees, and a third appointed by these two, or, if they fail to agree, by the Government. The board tries, by conciliation, to bring the parties to an agreement, and, if successful, reports its findings; if it is not successful, its report describes the conditions that caused the dispute, usually recommending what appear to be fair terms of settlement. If the parties in controversy are then unable to agree they may resort to the last measures of industrial warfare.

In this connection it may be well to note the fact that the Trades and Labor Congress of Canada, meeting in its thirty-second annual convention at Toronto, September 25-30, 1916, requested the repeal of the act.¹ On the other hand, the Canadian Federation of Labor, at its eighth annual convention at Quebec, September 8-10, 1916, adopted a report of the vice president generally approving the provisions of the act but recommending, as in the case of Australian and New Zealand legislation, that the enforcement of awards under it be made compulsory; that the act should be made applicable to all Government employees except those coming under the civil-service act, and to all industries instead of to public utilities only. It favored the suggestion that the word "strike" should be defined as applying to cases in which 50 per cent of the employees were concerned instead of 10 or more, as suggested in the amendment proposed by the minister of labor.²

¹ See report of proceedings of the thirty-second annual convention of the Trades and Labor Congress of Canada, p. 132.

² See Labor Gazette, issued by the Canadian department of labor, October, 1916, p. 1687.

According to the recently issued report of the registrar of the boards of conciliation and investigation,¹ 17 disputes were dealt with under the industrial disputes investigation act during the fiscal year ending March 31, 1916,² the number of employees directly affected in 16 of these disputes being 8,439, and the number indirectly affected in 7 being 6,923. With these 17 cases a total of 191 disputes have been handled since the act became effective on March 22, 1907; boards were granted in 169 instances and threatened strikes were averted in all save 20 cases. One feature of the year's operations of the act is specially noted—the passing of an order-in-council making the provisions of the statute applicable to disputes in industries producing munitions of war, equipment of soldiers, the building and repairing of ships, and in supplying war materials of all kinds. This order, promulgated on March 23, 1916, is as follows:

His Royal Highness the Governor General in Council is pleased, in virtue of the war measures act, 1914, to order that the provisions of the industrial disputes investigation act, 1907, other than section 63 thereof, shall specifically apply in the case of any dispute between employers and any employees engaged in the construction, production, repairing, manufacture, transportation, or delivery of ships, vessels, works, buildings, munitions, ordnance, guns, explosives, and materials and supplies of every nature and description whatsoever, intended for the use of His Majesty's military or naval forces or militia, or for the forces of the nations allied with the United Kingdom in the present war, if such dispute threatens to result in a strike or lockout.

It is recorded that as a result of this order no serious strike occurred during the fiscal year 1916 in any of the industries affected.

The minister had become aware of the existence, at some points, of considerable underlying friction in these industries, and action on these lines was regarded as affording the most promising means of securing, without cessation of labor, the adjustment of differences which might arise.

Since the publication of the report for the fiscal year 1916, a statement has been made available through the courtesy of Hon. F. A. Acland, deputy minister of labor, showing the operations under the industrial disputes investigation act from its inception, March 22, 1907, down to October 18, 1916. From this statement it appears that the total number of boards of conciliation and investigation established under the act during this period was 182, and that of 212 cases in which application was made for the establishment of a board, 167 were reported upon by the boards; 29 were settled without the establishment of boards; 8 were settled while board was in process

¹ Canada, ninth report of the registrar of boards of conciliation and investigation of proceedings under the industrial disputes investigation act, 1907, for the fiscal year ending Mar. 31, 1916. (Being an appendix to the annual report of the department of labor for the same period.) Ottawa, 1916. 204 pp.

² For an account of the operation of this act from the date it became effective, Mar. 22, 1907, to Oct. 31, 1915. see MONTHLY REVIEW for January, 1916, pp. 23 to 28.

of constitution; 1 board was restrained by the court of review from proceeding with its investigation; 6 are being dealt with by boards at the present time; and 1 is being held in abeyance to permit of a probable settlement. The following table shows in summary form, by classes of industries affected, the results of the operation of the act down to October 18, 1916:

DISPUTES SETTLED UNDER THE CANADIAN INDUSTRIAL DISPUTES INVESTIGATION ACT, MAR. 22, 1907, TO OCT. 18, 1916, BY CLASSES OF INDUSTRIES AFFECTED.

[Information furnished through the courtesy of Hon. F. A. Acland, deputy minister of labor, Ottawa Canada.]

Industries affected.	Number of disputes referred under the act.	Number of strikes not averted or ended.
Mines and public utilities:		
Coal mines.....	44	6
Metal mines.....	15	5
Total	50	11
Railways.....	85	7
Street railways.....	27	2
Shipping.....	11	
Commercial telegraphs.....	3	
Telephones.....	2	
Total	128	9
Light and power.....	4	
Municipal work.....	9	1
Total	13	1
Industries other than mines and public utilities.....	12	
Total, all classes.....	212	21

In the table following are shown the number of applications received under the act, the number of boards granted and the number of disputes in which strike was not averted or ended, for the calendar years 1907 to 1916, inclusive:

NUMBER OF APPLICATIONS RECEIVED, BOARDS GRANTED, AND DISPUTES WHERE STRIKE WAS NOT AVERTED OR ENDED, UNDER THE CANADIAN INDUSTRIAL DISPUTES INVESTIGATION ACT FOR THE CALENDAR YEARS 1907 TO 1916.

Item.	1907 ¹	1908	1909	1910	1911	1912	1913	1914	1915	1916 ²	Total.
Number of applications.....	25	27	22	28	21	16	18	18	15	22	212
Number of boards granted.....	22	25	21	23	16	16	15	18	12	14	182
Number of disputes where strike was not averted or ended.....	1	1	4	4	4	3	1	1	1	1	21

¹ Nine months only.

² To Oct. 18.

The report for the fiscal year includes a statistical summary of the operations of the industrial disputes investigation act for each year

since the inception of the act, March 22, 1907, and also a history of each application received during the fiscal year ending March 31, 1916.

PROPOSED CHANGES IN THE CANADIAN INDUSTRIAL DISPUTES INVESTIGATION ACT.

Modifications of the existing law are now under consideration by the Canadian minister of labor. In this revised draft, an effort has been made to meet objections which have arisen in connection with the operation of the law since 1907. One of the most important objects has been to prevent delays in the procedure for applications for boards and the elimination of the requirement of a costly strike ballot before an application for a board could be made. Under the present law 30 days' notice of intention to change wages or hours must be given, but the proposed law makes it clear that employees do not have to wait until the expiration of 30 days before applying for a board in respect of an intended change in wages or hours or other terms of employment, but may apply at any time after 10 days from the time notice is given. Further delay is sought to be prevented by reducing the time for granting or refusing a board from 15 to 10 days. If a board is refused, provided no industrial agreement is in effect and a strike vote has been taken, the employees may strike at once. In the proposed law a provision is also made for the interpretation or application of awards, which was entirely lacking in the original law, by authorizing the reconvening of a board to pass upon any disputed point. Where both parties agree to accept and abide by the recommendations of the board such recommendation shall be deemed to be an agreement between the parties. Under the present law the recommendation of the board may be made a rule of court. The option accorded in railway controversies of referring the dispute to the provisions of the railway disputes act of 1903, or the industrial disputes investigation act of 1907, is also eliminated, all disputes being brought under the proposed act. Important additions, in large measure borrowed from Australasian experience, are also made to the law. Among these, the most noteworthy are those making provision for the registration of industrial agreements, which shall not be effective for more than 5 years, and the requirement of a secret vote by ballot before a strike can be started. The leading changes and additions proposed, are thus summarized in the draft of the new measure which has been published by the Department of Labor of Canada.

In the bill now submitted for consideration endeavor has been made to remove a number of objections to the 1907 act and to remedy its defects, and a

number of new provisions relating to industrial agreements, false representations, and other matters have been added.

* * * * *

The unnecessary duplication of procedure in respect of railway disputes is removed, all such disputes being now brought under the one act. The main provisions respecting the appointment and proceedings of boards and the prohibition of lockouts and strikes are still, as heretofore, confined to public utilities and mining; but where both parties agree to the appointment of a board, such board may be appointed in respect of a dispute in any industry, whatever its nature. In long-continued or serious disputes in any industry, where neither of the parties applies for a board, the minister is given power to act on the application of any municipality interested or of his own motion and establish a board, or cause inquiry to be made in some other way.

The definitions and other parts of the 1907 act which have been found to be defective and inadequate have been redrafted and added to, much assistance in this respect being obtained from the Australian and New Zealand acts.

Endeavor has been made to make the procedure respecting applications for boards more simple and speedy, and it is provided that technical defects shall not invalidate applications, and that the establishment or proceedings of boards shall not be restrained or prohibited by the courts. It is not hereafter to be necessary to obtain authority for a strike before applying for a board.

A strike or lockout shall not, nor where application is made for a board within the time limited shall any dismissal, cause an employee to cease to be an employee for the purposes of the act.

Where any question arises as to the meaning or application of any recommendation of a board, the board may be reconvened to give its opinion or interpretation upon the point.

The provisions respecting notice of a change in wages or hours have been remodeled and made more comprehensive and effective, and the onus is put upon the party seeking to make the change of applying for a board where the other party does not consent to the change.

A secret vote by ballot is required to be taken before a strike.

Provision is made for registering industrial agreements, and lockouts or strikes in public-utility industries are forbidden where such agreements are in force, but either party may be relieved from the agreement by the report of a board.

The new measure proposed has not as yet been introduced into Parliament, and in order to avoid controversy may not be introduced until after the termination of the present European war.

RETAIL PRICES OF FOOD IN THE UNITED STATES.

Reports to the Bureau of Labor statistics from approximately 725 retail dealers in 45 of the principal industrial cities of the United States show that the retail price of food as a whole advanced 3 per cent from September 15 to October 15. The price of beef and pork chops declined in price; pork chops, 6 per cent, or from 25.4 cents

to 24 cents per pound. Smoked pork, however, made a slight advance.

All other articles, with the exception of tea, coffee, and rice, advanced in price from September 15 to October 15 from only the fraction of 1 per cent for hens to 11 per cent for eggs and 6 per cent each for butter, bread, and sugar.

The following table shows the average money retail prices and relative retail prices of food on September 15 and October 15, 1916:

AVERAGE MONEY RETAIL PRICES AND RELATIVE RETAIL PRICES OF FOOD ON
SEPT. 15, AND OCT. 15, 1916.

[The relative price shows the per cent that the average price on the 15th of each month was of the average price for the year 1915.]

Article.	Unit.	Average money price.		Relative price (average price for the year 1915=100).	
		Sept. 15, 1916.	Oct. 15, 1916.	Sept. 15, 1916.	Oct. 15, 1916.
Sirloin steak.....	Pound.....	\$0.281-	\$0.273-	110+	107+
Round steak.....	do.....	.255-	.246-	112-	108-
Rib roast.....	do.....	.218	.212	109-	106+
Chuck roast.....	do.....	.176-	.172+	109-	107-
Plate boiling beef.....	do.....	.130+	.129-	107-	106-
Pork chops.....	do.....	.254+	.240-	125-	118+
Bacon, smoked.....	do.....	.301-	.303+	110+	111-
Ham, smoked.....	do.....	.302+	.302+	117-	117
Lard, pure.....	do.....	.186+	.194-	126-	131+
Hens.....	do.....	.244-	.244-	117-	117+
Salmon, canned.....	do.....	.204	.206	102-	103-
Eggs, strictly fresh.....	Dozen.....	.405+	.449-	121	134-
Butter, creamery.....	Pound.....	.396+	.421+	110-	117-
Cheese.....	do.....	.256+	.268-	111-	116+
Milk, fresh.....	Quart.....	.093-	.095+	103	106+
Bread.....	16-oz. loaf ¹.....	.062+	.065+	109-	115+
Flour, wheat.....	1-bbl. bag.....	1.174-	1.234+	117+	123+
Corn meal.....	Pound.....	.033-	.034-	104	108+
Rice.....	do.....	.091-	.091-	100+	100+
Potatoes.....	Peck.....	.415-	.424-	181-	185-
Onions.....	Pound.....	.045+	.047-	132+	136-
Beans, navy.....	do.....	.119+	.121-	155+	157+
Prunes.....	do.....	.131+	.133-	99+	100-
Raisins, seeded.....	do.....	.129+	.131-	103-	104-
Sugar, granulated.....	do.....	.077+	.082-	117+	124+
Coffee.....	do.....	.302-	.302-	100-	100-
Tea.....	do.....	.551+	.551+	100+	100+
All articles combined.....				116+	119+

¹ 16 ounces (weight of dough).

Another table shows the average retail prices and relative retail prices of food on October 15 of each year from 1912 to 1916:

AVERAGE MONEY RETAIL PRICES AND RELATIVE RETAIL PRICES OF FOOD ON
OCT. 15 OF EACH YEAR, 1912 TO 1916.

[The relative price shows the per cent that the average price on the 15th of October in each year was of the average price of the year 1915.]

Article.	Unit.	Average money price Oct. 15.					Relative price Oct. 15 (av- erage for the year 1915= 100).				
		1912	1913	1914	1915	1916	1912	1913	1914	1915	1916
Sirloin steak.....	Pound...	\$0. 240-	\$0. 255+	\$0. 260+	\$0. 260+	\$0. 273-	94-	100+	102+	102-	107+
Round steak.....	do.....	. 203-	. 230-	. 237-	. 230-	. 246-	89+	101-	104-	101+	108-
Rib roast.....	do.....	. 188	. 200	. 204	. 202	. 212	94+	100-	102+	101	106+
Chuck roast.....	do.....	.....	.....	. 172+	. 163-	. 172+	.....	.....	107-	101-	107-
Plate boiling beef.....	do.....	.....	.....	. 128-	. 122-	. 129-	.....	.....	105-	100-	106-
Pork chops.....	do.....	. 222-	. 226-	. 232-	. 232-	. 240-	109+	111+	114-	114+	118+
Bacon, smoked.....	do.....	. 265+	. 281+	. 290-	. 279-	. 303+	97-	103	106+	102-	111-
Ham, smoked.....	do.....	. 251-	. 271+	. 279-	. 261-	. 302+	97-	105+	108+	101+	117
Lard, pure.....	do.....	. 160-	. 160-	. 155+	. 144-	. 194-	108	108+	105+	97+	131+
Hens.....	do.....	. 200-	. 212+	. 214+	. 206+	. 244-	96+	102+	103-	90+	117+
Salmon, canned.....	do.....	.....	.....	.....	. 200	. 206	.....	.....	.....	100+	103-
Eggs, strictly fresh.....	Dozen.....	. 385+	. 409-	. 385+	. 395+	. 449-	115-	122+	115-	118+	134-
Butter, creamery.....	Pound.....	. 378+	. 385	. 378+	. 353-	. 421+	105-	107-	105+	98	117-
Cheese.....	do.....	.....	.....	.....	. 229-	. 268-	.....	.....	.....	99-	116+
Milk, fresh.....	Quart.....	. 090	. 092-	. 092-	. 090	. 095+	100-	102-	102-	100+	106+
Bread.....	16-oz. loaf.....	.....	.....	. 052-	. 056+	. 065+	.....	.....	91+	99-	115+
Flour, wheat.....	1-bbl. bag.....	. 823-	. 703-	. 883-	. 903-	1. 234+	82+	79+	88+	90+	123+
Corn meal.....	Pound.....	. 030+	. 030-	. 032-	. 031-	. 034-	96	95+	101-	99+	108+
Rice.....	do.....	.....	.....	.....	. 091-	. 091-	.....	.....	.....	100-	100+
Potatoes.....	Peck.....	. 234-	. 273-	. 229+	. 243-	. 424-	102-	119	100+	106-	185-
Onions.....	Pound.....	.....	.....	.....	. 032+	. 047-	.....	.....	.....	94-	136-
Beans, navy.....	do.....	.....	.....	.....	. 078-	. 121-	.....	.....	.....	101+	157+
Prunes.....	do.....	.....	.....	.....	. 131+	. 133-	.....	.....	.....	99	100-
Raisins, seeded.....	do.....	.....	.....	.....	. 126-	. 131-	.....	.....	.....	100+	104-
Sugar, granulated.....	do.....	. 061-	. 055+	. 073-	. 061+	. 082-	92+	84-	110-	93-	124+
Coffee.....	do.....	.....	.....	.....	. 302-	. 302-	.....	.....	.....	100-	100-
Tea.....	do.....	.....	.....	.....	. 551+	. 551+	.....	.....	.....	100+	100+
All articles combined.....	.....	.....	.....	.....	.....	.....	98-	102+	104-	103	119+

¹ 16 ounces (weight of dough).

Each article for which prices are shown from 1912 to 1916 was higher on October 15, 1916, than on the same date of the four years preceding. For all articles combined the increase in price from October 15, 1912, to October 15, 1916, was 21 per cent.

From October 15, 1915, to October 15, 1916, the price of tea and coffee was the same, and all other articles advanced from a fraction of 1 per cent for rice to 75 per cent for potatoes and 55 per cent for beans. The increase in the price of all articles combined from October 15, 1915, to October 15, 1916, was 16 per cent.

REPORT ON THE MONTANA WORKMEN'S COMPENSATION ACT.

The first annual report of the operation of the Montana workmen's compensation act,¹ covering the 12 months ending June 30,

¹ Montana. Industrial accident board. First annual report for the 12 months ending June 30, 1916. [Helena, 1916.] 294 pp.

1916, includes much of the information and material, greatly amplified, contained in the report ¹ issued on October 1, 1915, covering the first three months of the act. The report under review gives in detail the financial condition of the board, including statements of the administrative expenditures and claims requiring payment of compensation. It also shows in condensed form a small portion of the statistical data gathered by the board, classified according to industry, plan of compensation elected,² and the extent and nature of the injuries suffered by workmen. Preceding this statistical information the report discusses compensation laws in general and draws a comparison between the Montana law and those of other States. "The first year's experience under the law has demonstrated its efficiency. It has afforded certain and prompt pecuniary relief without any recourse to never-ending, trouble-making litigation." Some adverse criticism of the schedule of compensation and the inadequacy of awards based on 50 per cent of the employee's wages and objections to the two weeks' waiting period are noted, followed by a brief outline of the operations under the three plans of insurance.

Although the Montana law is elective, the report states that fully 98 per cent of the employers who employ five men or more, and 96 per cent of all workmen in the State are subject to its provisions. It is estimated that 60,000 workers are employed in hazardous occupations. According to the report 65 firms, employing 22,185 ³ workers, were accepted under the first plan, and during the year they paid out in compensation, including 50 lump-sum death settlements and 105 burial expenses, \$244,625.43. The claims awaiting settlement under this plan are estimated at about \$69,000, making a total compensation liability of \$313,625.43. Computed on an estimated pay roll of \$50,000,000 ⁴ this would indicate a total cost to employers of approximately 0.63 per cent.

Under the second plan 1,000 applications were accepted, representing 15,063 ⁵ employees. During the year 13 insurance com-

¹ A digest of this report was published in the MONTHLY REVIEW for February, 1916, p. 67.

² These plans were described in the digest referred to in note 1. The first plan, sometimes called "self-insurance," allows the employer, upon satisfying the board as to his solvency, to pay the compensation due the injured directly to him, or in case of death, to his beneficiaries. Under the second plan the employer shall insure his risk with some insurance company authorized to do business in the State, which company shall pay the compensation to the injured employee. The third plan is called State insurance. It provides that the employer shall pay a certain rate of premium on his pay roll into the State industrial accident fund and that an injured employee shall be paid directly from this fund.

³ This is the number reported in 1914. The board estimates the total number during the year covered by the report at about 40,000.

⁴ It is explained that the pay-roll reports received by the board do not cover the present year, but date back in the majority of cases to 1914, when the total pay roll was over \$32,000,000.

⁵ This is the number reported in 1914. The board estimates the total number during the year covered by the report at 20,000.

panies carrying these risks paid out in compensation, burial, medical, and hospital expenses, \$42,470.63. It is estimated that \$25,200 would be required to liquidate pending claims, which would make a total of \$67,670.63 as the amount necessary to cover the total liability for compensation cost under this plan. Computed on an annual pay roll of \$20,000,000¹ this indicates an actual accident cost of about one-third of 1 per cent.

It appears that only 453 employers, with 6,521 employees, are operating under the State insurance plan, and that the State has paid out in compensation of all kinds \$6,303.35, with pending claims aggregating about \$906.29, making a total liability for the year of \$7,209.64. This, computed on the yearly pay roll, namely, \$2,950,313.93, indicates an accident cost of less than one-fourth of 1 per cent (0.24) of the annual pay roll. According to the report, only two assessments were levied against these firms during the year at a total cost to employers of a little more than one-half of 1 per cent on their annual pay rolls, "which perhaps represents as low an annual insurance cost to employers operating under compensation laws as exists anywhere in the world. Yet, despite this low premium cost, a surplus of \$22,684.56 has been accumulated in the fund which represents three times the amount that has been paid out."

During the year 6,802 accidents were reported, of which 136 were fatal, 3 resulted in permanent total disability, 89 in permanent partial disability, 6,574 in temporary disability. Of this latter number 1,431² received compensation and 5,145² returned to work before the expiration of the two weeks waiting period, receiving, therefore, only the medical and hospital attendance provided by the law. The amount paid out in burial expenses in the 136 fatal cases was \$8,590.90, and in 78 of these cases compensation was paid amounting to \$169,111.30. To 89 cases of permanent partial disability, compensation to the amount of \$26,198.14 was paid; to the 1,431 employees temporarily disabled, compensation to the amount of \$69,954.53 was paid, on account of incapacity or loss of time. In three permanent total disability cases compensation to the amount of \$7,694 was paid. For medical and hospital services there was a total of \$11,850.54 paid out. The following table shows the payments made for the purposes indicated under each specified plan of insurance:

¹ It is not stated whether this amount is based upon reports received or is estimated.

² This is taken from the report. Added to the other figure, it does not total 6,574.

PAYMENTS MADE FOR THE PURPOSES INDICATED UNDER EACH SPECIFIED PLAN OF INSURANCE, FOR THE YEAR ENDING JUNE 30, 1916.

Plan.	Compensation.	Fatal.	Medical.	Hospital.	Burial.	Total.
First.....	\$71,741.68	\$160,891.06	\$3,021.98	\$1,804.81	\$7,165.90	\$244,625.43
Second.....	27,216.64	8,220.24	4,571.14	1,037.61	1,425.00	42,470.63
Third.....	4,888.35	.....	1,185.70	229.30	.....	6,303.35
Total.....	103,846.67	169,111.30	8,778.82	3,071.72	8,590.90	293,399.41

Of the 6,802 accidents, 4,391 came under plan 1, 2,236 under plan 2, and 175 under plan 3. Ninety-seven, or 71.3 per cent of the fatal accidents, and 4,714, or 71.7 per cent of the accidents causing temporary total disability, occurred in mines. Of the accidents resulting in temporary total disability, the largest number, 2,402, or 36.5 per cent, are classified as contusions and bruises, while 2,133, or 32.4 per cent, are classified as lacerations. The total time lost on account of all accidents, not counting the number killed or those whose earning capacity was reduced, was 65,910 days, representing an estimated wage loss of \$261,443.52.

The report emphasizes the economy with which the act has been administered during the year, and states that of the original \$50,000 appropriated by the State to cover a period of two years, at least \$14,000 will be returned to the State treasury at the end of the biennium. The following financial statement is included.

<i>Assets.</i>		<i>Liabilities.</i>	
Industrial fund	\$21,171.51	Premium income	\$32,821.43
Investment fund (registered warrants)	3,122.43	Less uncollected	2,927.13
Administrative fund	42,593.25		
Compensation	6,303.35	Collections	\$29,894.30
Administrative expense	25,426.76	Administrative income	3,355.70
Refunds	840.44	Less uncollected	100.95
Bonds and securities (deposited for plan 1)	149,800.00		
Furniture and fixtures	855.40	Collections (inspection fees)	3,254.75
Adjustments	70.00	Industrial fund warrant account	1,609.28
		Administrative fund warrant account	15,589.81
		Appropriation	50,000.00
		Bonds and securities in trust	149,800.00
		Special deposits	35.00
Total	250,183.14	Total	250,183.14

A table is given showing that under plan 3, 171 firms, with pay rolls amounting to \$2,950,313.93, contributed \$29,158.86 to the State fund.

ACCIDENTS IN THE GAS INDUSTRY.

The report of the committee on analysis of accidents in the gas industry,¹ submitted at the eleventh annual meeting of the American Gas Institute in October last, gives a record of 10,000 accidents, 3,763 of which were reported during the past institute year by 104 companies in 30 States. Of the 10,000 cases 27 were fatalities. By combining the analyses for the two institute years ending September 1, 1916, the report announces that—

Of the 6,499 cases reported during the two years 5,283 reported on disability, and of that number 2,286, or 43 per cent, reported disabilities amounting in all to 25,036 days, being an average of 10.9 day's disability per case, and in 2,997 cases, or 57 per cent, it was reported that no disability resulted. Of the 2,286 cases of disability it was found that 478 (20.9 per cent) showed periods of disability of over two weeks each and involved a total disability of 13,346 days, being an average of 27.9 day's disability per case. It is also interesting to note that of 4,325 cases reported during the two years on length of service, 1,946, or 45 per cent, of the employees injured had been in the company's employ one year or less. During the two years' period, 6,362 reports indicated the age of the injured employees, which showed the average age to be 33 years.

The following table gives the analysis of the 10,000 cases by causes:

ANALYSIS OF 10,000 ACCIDENTS IN THE GAS INDUSTRY, BY CAUSES.

[The report does not give the numbers shown here, but they were furnished through the courtesy of the chairman of the committee, Mr. James B. Douglas.]

Cause of accident.	Nonfatal.		Fatal.		Total.
	Number.	Per cent.	Number.	Per cent.	
Leak of gas outside.....	133	1.33	4	14.81	137
Leak of gas inside.....	88	.88			88
Animal bites.....	195	1.96			195
Machinery in operation.....	323	3.24	2	7.41	325
Elevators, etc.....	169	1.69	2	7.41	171
Explosions, ignited gas, etc.....	265	2.66	3	11.11	268
Falling in or through openings.....	449	4.50	3	11.11	452
Hot material.....	489	4.90	1	3.70	490
Objects, hanging or swinging.....	96	.96			96
Objects, protruding.....	421	4.22			421
Objects, falling.....	1,035	10.38	2	7.41	1,037
Flying particles.....	872	8.74			872
Vehicles, etc.....	919	9.21	5	18.52	924
Nails, wires, etc.....	620	6.22			620
Handling material.....	1,057	10.60	1	3.70	1,058
Slipping or tripping.....	866	8.68			866
Hand tools used by injured.....	1,235	12.38			1,235
Hand tools used by others.....	189	1.90			189
Miscellaneous.....	552	5.53	4	14.81	556
Total.....	9,973	100.00	27	100.00	10,000

¹ Report of committee on analysis of accidents, presented at the eleventh annual meeting of the American Gas Institute, October, 1916. [American Gas Institute, 29 West Thirty-ninth Street, New York.] 6 pp.

In a statement of the effect of these accidents it is shown that 67.2 per cent are classed as lacerations or contusions, 8 per cent as burns, 5.4 per cent as fractures, 8.6 per cent as eye injuries, 8.1 per cent as strains, etc., and 2.8 per cent as illness caused by gas. The report states that the work on analyses of accidents from year to year done by the several committees has been of real value and has been used on a number of occasions to prove that the gas industry can not be properly classified as extrahazardous.

It will be noted that accidents peculiar to the industry, i. e., leak of gas (outside and inside) and explosions, constituted but 4.9 per cent of the 10,000 cases reviewed. This being positive evidence, should prove convincing to any State body or insurance committee having to do with casualty ratings for the industry.

The committee recommends that this work be continued and that the president of the institute urge the members to make better response to the committee's requests for reports of accidents.

WORKMEN'S COMPENSATION CASES IN THE UNITED STATES SUPREME COURT.

On Monday, November 13, the Supreme Court ordered a reargument of a number of cases named below affecting the validity and construction of the compensation laws of Iowa, New Jersey, New York, and Washington. The Iowa case (*Hawkins v. Bleakley*) came up from a district court of the United States, while the others were cases from the State courts.

The Iowa case was decided June 22, 1914, and the validity of the compensation law of that State was upheld against contentions of its unconstitutionality as depriving of liberty of contract, due process of law, and right of trial by jury, the court saying that these could be waived by the parties in interest, either expressly or by common consent or acquiescence. The provisions abrogating the common-law defenses, arranging for arbitration by the industrial commissioner of the State, and arranging for the insurance of the employer's liabilities under the act were also upheld.

The point involved in the New Jersey case (*Erie Railroad Co. v. Winfield*, Jan. 6, 1916) is the applicability of the State compensation law to injuries received in interstate commerce where there is neither allegation nor proof of negligence on the part of the railroad company. The court of errors and appeals of the State held the law applicable, while the company contended that the Federal law alone controls where the injury is received in interstate commerce. The contentions are identical in one of the New York cases (*New York*

Central & Hudson River Railroad v. Winfield, May 7, 1915), the court of last resort of that State taking the same view as the courts of New Jersey.

In *Southern Pacific Co. v. Jensen* (July 13, 1915), the same New York court held the State law to apply where there was interstate commerce by steamship; while in *Clyde Steamship Co. v. Walker* (July 15, 1915), this court held the compensation law available as an alternative remedy with that afforded by admiralty law. Still another case (*New York Central & Hudson River Railroad v. White*) is included in the order for reargument, coming up from the New York Supreme Court, appellate division, but no report of this case appears in the sources at hand.

The Washington case (*Mountain Timber Co. v. State of Washington*, Oct. 6, 1913) was brought from the supreme court of that State, it having been put forward as a test case. The points involved are the general ones of the due process of law, depriving of the right of trial by jury, and unlawful search and seizure. However, inasmuch as the law is compulsory in form, thereby differing from that of Iowa, the question of voluntary waiver can not be argued, as was done in that case, and the decision will be of correspondingly greater interest in view of the position taken by some courts that while voluntary acceptance of an elective law makes such provisions legal, a compulsory establishment of them would not be.

No date was set for the reargument.

DEMAND FOR EXTENSION OF STATE WORKMEN'S COMPENSATION LAWS TO COVER PAINTERS, DECORATORS, AND PAPER HANGERS.

The interest which is being manifested in one of the topics to be considered at the forthcoming Conference on Social Insurance is shown somewhat strikingly in a recent letter from one of the most prominent trade-union leaders. Mr. J. M. Skemp, grand secretary-treasurer of the Brotherhood of Painters, Decorators, and Paperhangers of America, under date of October 26, 1916, writes as follows:

If we are unable to have a delegate from the brotherhood in attendance, I trust that the attention of the conference will be drawn to the illogical and indefensible numerical restrictions in the laws of Alaska, Colorado, Connecticut, Kansas, Nebraska, Rhode Island, Vermont, Texas, Ohio, and Wyoming. In none of these States is compensation provided for accidents to men working in establishments in which less than a given number, usually five, of workmen are employed. This greatly lessens the value of these laws to the men engaged in the painting industry. Not less than 50 per cent of the 87,000 members of the brotherhood work in shops that employ less than five men. The economic loss and the need for compensation for the injury or death of a workman employed

in a small establishment are as great as in the case of an injury or death of a workman employed in a large establishment. In no way can the restriction be justified.

In addition to our interest in this particular provision which so directly affects the men of our trade, we believe that workmen's compensation laws should be compulsory; that State insurance should obtain to the exclusion of casualty-company insurance, self-insurance, or insurance through employers' mutual associations; that compensation should be paid from the commencement of the disability; that it should be more liberal than so far provided; and that in the case of permanent disability it should continue for life and in case of death be paid to the widow for life or until remarriage and to the children until 18 years of age. Surgical and hospital service should also be provided for.

We are also greatly concerned in the provision of compensation for disability due to occupational disease. Many men employed in the painting industry become partially or totally disabled through lead poisoning. Their loss is as great, their need as urgent, as if their disability were caused by a fall or some other accident.

The rapid progress that is being made in social insurance is wonderfully encouraging. It should inspire us to further and greater effort.

INDUSTRIAL HYGIENE AT THE MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

Fatigue, efficiency, insurance, and the effect of certain industrial poisons were the subjects primarily claiming the attention of those who addressed the industrial hygiene section of the convention of the American Public Health Association held in Cincinnati, October 24 to 27. The scientific aspect was discussed by C. E. A. Winslow, of Yale University, and Dr. F. S. Lee, of Columbia University. Prof. Winslow, in a paper entitled "The Effect of Air Conditions on Fatigue and Efficiency," referred to experiments of the commission on ventilation, which showed that actual physical changes of an abnormal character occur when the temperature rises from 68° to 86° and that there is a marked loss of efficiency resulting in the falling off of production at the higher temperature. Dr Lee in his paper "Is the Eight-hour Day Rational?" maintained that since some occupations are more fatiguing than others the length of the workday should not be the same for all, and that if the work demanded of a man in one day is beyond his physical powers the day should be shortened. Observation of workers is necessary before the question as to the length can be determined.

"Scientific Management and Its Relation to the Health of Workers" was the title of a paper by Richard A. Feiss, the Clothcraft Shops, Cleveland. Based upon a large experience with efficiency methods, Mr. Feiss stated that the introduction of such a system had resulted in a reduction of the labor turnover and that under scientific

management there is an increase in the health and happiness of workers.

John P. Frey, International Molders' Union, Cleveland, Ohio, discussed "The Relation of Scientific Management to Labor," contending that scientific management fosters speed and monotony and, as practiced, increases fatigue.

The symposium on industrial health insurance, while not carried out as arranged, developed into a general discussion, in which the principle of health insurance was, on the whole, indorsed, although some of the speakers took occasion to emphasize particular features regarded as important in the measure being urged by the American Association for Labor Legislation. Among these are the need for preventive medicine, some way of inspiring negligent communities and negligent employers to increased effort in providing for workers, and the importance of protecting the rights of injured sick men so that they may receive as good if not better service than they do now. Dr. William C. Woodward, Washington, D. C., urged the importance of care in the selection and supervision of competent physicians in each insurance unit. Dr. Otto P. Geier, Cincinnati, thought it inadvisable to enact health insurance legislation without further and careful study lest the mistakes of the British and German systems be duplicated. Dr. Sidney McCurdy, Youngstown, Ohio, favored compulsory health insurance. Dr. John B. Andrews, of the American Association for Labor Legislation, seemed to think that indirectly the proposed bill would have the effect of bringing the careless employer into line, and in this opinion he was indorsed by Dr. Meeker, of the United States Bureau of Labor Statistics. Dr. Andrews also held that supervision of medical work should be in the hands of physicians directly responsible to those who control the fund and not given over to public health officials.

The third session of the industrial hygiene section was held in conjunction with the section on sociology. Papers were read on "The Relation of the United States Department of Labor to Industrial Hygiene," by Royal Meeker, Commissioner of the United States Bureau of Labor Statistics; "The Relation of the Public Health Service to Problems of Industrial Hygiene," by Dr. J. W. Kerr, United States Public Health Service; "The State and Industrial Hygiene," by Dr. E. R. Hayhurst, Ohio State University; "The Municipality and Industrial Hygiene," by Dr. Louis I. Harris, New York City Health Department.

Two sessions were devoted to a discussion of industrial toxemias, covering the following industrial poisons: Carbon monoxid poisoning; benzol and allied compounds; volatile poisons and high explosives; carbon dioxid; lead poisoning; gasoline-engine gas poisoning;

aniline poisoning; mercurial poisoning; and metal alcohol poisoning. "Dermatitis in the Manufacture of High Explosives," "Modern Chemical Industries and Public Health," "The Physical Examination of Employees in the Cement Industry," "Bleach Powder Chambers," and "The Dangers Connected with the Spray Method of Finishing and Decorating" were the subjects of other papers.

Summaries of the more important papers will be presented in a later number of the MONTHLY REVIEW.

DETERMINATION OF THE CONSEQUENCES OF INDUSTRIAL ACCIDENTS IN AUSTRIA.¹

BY FERDINAND SCHNITZLER.

LEGAL PROVISIONS AS TO MODE AND AMOUNT OF COMPENSATION OF INJURED PERSONS.

The compensations of the workmen's accident insurance in Austria consist chiefly in pensions governed by the computable annual earnings which, except in the case of railroad employees, are as a rule limited to a maximum of 2,400 crowns (\$487.20)—i. e., any amount in excess is not considered in computing the pension. The principal provisions for the compensation of injured persons, as contained in article 6 of the law of 1887, are the following:

The compensation in case of physical injury shall consist in the granting of a pension to the injured person for the duration of the disability, this pension to begin with the commencement of the fifth week after the occurrence of the accident.

The pension shall consist—

(a) In the case of total disability, for the duration of the same, of 60 per cent of the annual earnings; and

(b) In the case of partial disability, for the duration of the same, of a fraction of the pension determined under (a), to be computed according to the degree of remaining earning capacity, but never to exceed 50 per cent of the annual earnings.

The law of 1894 extended accident insurance also to the railroads, and the compensation of workmen and officials in the operating departments was regulated in a different manner, so as to favor railroad employees. In the first place, the above-mentioned limitation of the computable amount of annual earnings is not applicable to them, and,

¹ Translation from "Oesterreichische Zeitschrift für öffentliche und private Versicherung," Vol. V, Nos. 1 and 2, Wien, 1914, pp. 197ff. This article was prepared for presentation at the Congress on Social Insurance, which was to be held in Paris in September, 1914, but was abandoned on account of the war. The author is director of the Workmen's Accident Insurance Institute for Moravia and Silesia and professor in the Technical Institute at Brunn.

secondly, Article VII, paragraphs 4 and 5, provides with respect to the computation of the pension as follows:

Railway employees who are insured either under Article I [1], or Article V, and Government employees insured according to Article V, who, under the conditions of the road's charter or other existing regulations, are entitled to free transportation, are not under the application of the provisions of the law of March 5, 1869 (*Reichsgesetzblatt* No. 27), if under this act they have a right to compensation apart from the provisions of articles 46 and 47 of the law concerning accident insurance.

Nevertheless, in case the aforementioned persons or their survivors have a right to claim compensation under the law of March 5, 1869 (*Reichsgesetzblatt* No. 27), the pension provided for the injured person by the accident insurance law shall be increased one-half and in case of permanent disability it shall be increased still more according to circumstances; nevertheless, it shall not be more than double the amount provided for by the insurance law; that is, 120 per cent of the full annual earnings. The pension allowed to dependents shall be increased two-thirds.

The above-mentioned law of March 5, 1869, is the so-called railroad liability law.

The other laws relating to accident insurance of workmen do not contain any different provisions as to the amount of the compensation of injured persons.

The law does not give to the injured person the right to demand a lump-sum settlement for the entire pension or for part of it. The insurance institutes are, however, authorized to pay to injured persons who are Austrian subjects the capitalized value of their pension, provided the injured person and the commune obligated to grant him poor relief consent to this form of settlement. Compensation claims of foreigners may without their consent be settled with proportionate lump-sum payments. Several insurance institutes have adopted the practice of offering lump-sum settlements for small pensions whenever the decrease in the earning capacity is not important, and compensation by means of the capitalized value seems more advantageous for the injured person than the payment of a small pension, from which as a rule no economic effect may be expected. However, compensation by means of a pension is the rule.

LEGAL PROVISIONS FOR THE DETERMINATION OF THE COMPENSATION.

Paragraphs 2 and 3 of article 33 of the law of 1887 provide as follows:

If insured persons are physically injured as the result of an accident the determination of the pension due them in accordance with article 6 must be effected after the lapse of four weeks after the occurrence of the accident for those injured persons who at that time are still entirely or partially disabled.

In the case of those injured persons who after the lapse of four weeks are still under medical treatment in order to effect a cure of the injuries suffered, the determination of the compensation shall at first be limited to the pension payments to be made until the termination of the medical treatment, subsequent amounts payable to be fixed after such termination.

Article 36 of the same law says:

The insurance institute must render to the person entitled to compensation a written decision as to the compensation awarded on the initiative of the institute or on application of the claimant. This decision must show the amount of the compensation awarded and the method of its computation. In the case of disabled persons this decision must show whether total or partial disability has been determined.

Disallowance of a claim to compensation must also be effected by written decision.

Article 39 of the same law contains the following provisions as to later occurring changes in the determination of the compensation.

If important changes occur in the conditions which were decisive for the determination of the compensation, a new determination of the latter may be effected by the insurance institute either on application or on the institute's own initiative. * * *

An increase of the determined pension may only be claimed for the period after application for an increased annuity.

A decrease or discontinuance of the determined pension becomes effective with the date on which the decision decreeing it is transmitted to the person entitled to compensation. An appeal against this decision to the arbitration court does not act as a stay.

DECISION OF APPEALS OF DISAPPROVED CLAIMS—ARBITRATION COURTS.

The compensation is determined in the insurance institute by officials designated in its by-laws. A court of arbitration maintained by each insurance institute is exclusively competent for the decision of claims for compensation which have been disapproved by the institute. Claims for compensation may be appealed to this court within a year after transmission of the decision of the institute. The court of arbitration renders its decisions through so-called senates, composed of a judge of a court of higher instance and four associate members. Two of the latter must be persons of technical training and are appointed by the minister of the interior after consultation with the ministers interested; the other two are elected, one by the employers of the insured establishments and the other by the insured persons from among themselves. No member of the court of arbitration may be a member of the board of directors or hold any other position in the insurance institute. The Austrian courts of arbitration are therefore courts composed of laymen presided over by a judge. The decisions of the court of arbitration are final. Legal

means or appeals against decisions of the court are not permissible. A higher appellate body common to all insurance institutes, such as the German Imperial Insurance Office, does not exist in Austria.

BASIS FOR COMPENSATION OF INJURED PERSONS: DECREASE IN EARNING CAPACITY—DETERMINATION OF CONSEQUENCES OF THE ACCIDENT.

Decrease in the earning capacity caused by an industrial accident is the basis and occasion for compensation of an injured person.

Neither the Austrian law of 1887 nor the German accident insurance law of July 6, 1884, after which it was patterned, contain any provisions defining the term "earning capacity," nor as to when total disability is to be assumed, nor by what standard the decrease in earning capacity is to be measured, nor does the law authorize the Government to issue such provisions by administrative decree. Subsequent laws have not made any change in this respect.

In Austria, therefore, there are no binding provisions for the valuation of the decrease in earning capacity, such as are contained in the laws of some foreign countries or have been decreed by legally authorized administrative decrees, nor is there a central authority, such as the German Imperial Insurance Office, which controls the application of the law in the entire territory subject to it and thereby guarantees its uniform interpretation. Consequently it is not surprising that a uniform compensation practice has not so far developed in Austria, although compulsory accident insurance has been in force there for a quarter of a century.

In theory it can be considered as undisputed that it is not the bodily injury in itself which is to be the basis for the award of compensation, but its injurious effects upon the earning capacity of the victim; not the injury of parts of the body or of the organs of sense, nor the lessening of the physical and mental capabilities of the victim in themselves, but the injury suffered by the affected person in his ability to earn a living. From this fundamental conception it not only follows that entirely like injuries of the body or its functions must be valued differently in different persons, but also that in the meaning of the law one and the same person may in case of a single injury be entitled to different compensations at different times. Even the experiences of every day life teach us that one and the same infirmity may, in a varying measure, according to the age, sex, occupation, and other characteristics of the person affected, influence his earning capacity; also that in many instances the affected person may gradually diminish the injurious influence of the infirmity upon his earning capacity until this influence is finally not felt at all. In mentioning this we do not have in mind those instances in which the

affected person takes to another occupation, in which his infirmity is no longer a hindrance because the injured part of the body is not made use of at all or only in a small measure, nor those instances in which the lost part of the body has an artificial substitute (*a prosthesis*). What we have in mind are those cases in which the equalization has been effected by greater use of a part of the body which has been less used before the accident, by a changed bodily posture, or in a similar manner. We may, therefore, speak only of a determination of the consequences of an accident in the proper meaning of the term if the victim, notwithstanding the infirmity caused by the accident, is without the aid of an artificial substitute able to follow the same industrial occupation as before the occurrence of the accident.

If one keeps in mind that accident insurance is an insurance against damages (*Schadenversicherung*), and that the law in its wording and spirit considers as damage to the injured person the diminished earning capacity caused by the accident, one can hardly entertain any doubt that adjustment to the consequences of the accident may form a reason for reducing the pension, even if the medical examination shows no change in the condition of the injury.

The question as to whether the fact that an injured person, although visibly injured, is able to perform without inconvenience the same work as before the accident and earns the same wages as a physically perfect workman of the same occupation, does in itself justify the assumption that he has not suffered any damage, must, from a theoretical point of view, be answered in the negative. It must above all be kept in mind that according to the law the decreased earning capacity is the damage to be compensated and not the diminished capacity to fill a specified occupation. Just as we do not award the highest possible pension to an injured workman for the simple reason that he has become incapacitated for the occupation exercised before the accident, but demand of him with right that he should seek employment in some other occupation still open to him, so it should not be asserted that an injured person who is able to continue in his former occupation at the same rate of wages has not suffered any damage at all, even though other opportunities for occupation have through the consequences of the accident been closed to him. This consideration is of more than theoretical importance.

In taking into account the enormous changes in the technical processes which occur in rapidly increasing sequence, one must in the case of each "skilled" workman figure with the possibility that a day may arrive when he will no longer be able to put his acquired skill to use and will be forced to learn some new trade. Consequences of accidents which in his original occupation he was able to overcome

quickly and to which he could adjust himself may be of great hindrance to him in a change from his former occupation to a new one. In addition, it should be kept in mind that organs which may be used as substitutes, in a sense, in the case of injury to other organs, may themselves be injured through accident or sickness, outside of industrial employment, in such a manner that the earning capacity of the affected person is essentially lessened without giving rise to a claim for compensation. This relation becomes most evident if one considers the loss of an eye. It is a well-known fact that numerous one-eyed workmen are able to perform their usual work just as well as workmen with two sound eyes. If, however, the visual capacity of a one-eyed workman becomes lessened, it is, of course, far more important than a like lessening of the visual capacity of one eye in the case of a workman who has another sound eye. If the one-eyed workman loses the use of his sound eye, he becomes unable to earn a living, and if this misfortune befalls him outside of his employment in the insured establishment, he has not even a claim to compensation from the insurance institute. It would, therefore, certainly be an injustice if a workman who has lost an eye were denied compensation for the simple reason that he is able to perform his usual work without any loss in earnings. The consideration of other consequences of accidents leads to similar conclusions.

If the two combined facts that an injured person is engaged in the same occupation after the accident and makes the same earnings as before the accident do not justify the conclusion that he has suffered no injury to his earning capacity, how much less can the conclusion be reached from the single fact that the earnings are the same? In this connection it should be kept in mind that the earnings of a workman depend, in addition to his physical capacity for work, on quite a number of other circumstances, which are partly within and partly outside of his person. The longer the period which has elapsed from the occurrence of the accident up to the point of time on which comparisons are to be made as to the condition of the injured person, the more consideration should be given to the changes which have taken place in the personal conditions of the injured person (old age, possible infirmities not connected with the accident, etc.), on the one hand, and, on the other, in the economic conditions (business condition in general and in the industries to be considered with respect to the injured person in particular, increase of wages, etc.).

Brief mention should here be made of the fact that the conception as to the influence to be attributed to adjustment to injuries in the determination of the compensation has gradually become clearer in Germany, and especially of the fact that the imperial insurance office

has adopted a different attitude to this question from that heretofore maintained. In Austria, as has been remarked, there does not exist in the compensation procedure a supreme appellate body, such as the German Imperial Insurance Office, which through its powerful influence guarantees the clearing up of disputed questions and thereby insures not merely a uniform interpretation of the legal provisions but also a sound development of the law.

COMPENSATION PRACTICE.

During the first years of their operation the Austrian insurance institutes had varying interpretations of compensation practice. While a majority of the territorial institutes considered the earnings after the accident an important but not exclusively decisive factor in the determination of the decrease of earning capacity, a minority of the institutes considered it as the only means for measuring the decrease of earning capacity, and consequently did not grant any compensation in instances in which diminished earnings could not be established, even if the visible injuries were very serious. An institute representing this interpretation of course can not escape the inference that if a decrease of earning capacity sets in at a later period and its casual connection with the consequences of the accident can not with absolute certainty be excluded, a compensation must be granted. The practical application of this interpretation soon encountered the greatest difficulties. Even if the influence, which old age or sickness and infirmities not connected with the accident may exercise, is left out of consideration, there may, in the case of each discharge from employment and of the unemployment of shorter or longer duration connected with it, be raised the question, How far is it due to the consequences of the accident? Unfavorable experiences forced the minority to adopt the interpretation of the majority, so that at present the territorial institutes are in accord as to the principles to be adhered to in the determination of compensation. The trade accident insurance institute of the Austrian railroads continues in adhering in a certain measure to the opposite interpretation, which is probably connected with the fact that a large number of its insured persons receive fixed salaries which, as a rule, are not decreased if the injured employee is continued in the service.

The determination of the visible consequences of injuries is a matter for the physician. All workmen's accident insurance institutes have established a more or less extensive expert medical service, and the determination of compensation is always effected on the basis of medical opinions rendered. The weight which the officials of the

insurance institutes charged with the award of compensation attribute to these medical opinions varies in the individual institutes. While one institute, with few exceptions bases the award of compensation entirely on the medical estimate of the decrease of earning capacity, another institute, in addition, investigates what occupation the injured person is engaged in after the accident, and how much he earns, and, based on the agreement of the medical opinion with these circumstances, it estimates the degree of disability. The author of the present paper has on another occasion ("The Determination of the Degree of Disability," Vienna Congress, 1905, Pt. II, pp. 317ff) given his reasons for the opinion that the determination of the degree of disability is not exclusively a matter for the physician, and knows this opinion is not only in agreement with the expressions of the German Imperial Insurance Office, but also with the utterances of a considerable number of prominent physicians. With increasing frequency the admission is encountered in technical literature that the compensation scales now in use for specified visible injuries are based on very faulty principles. In inquiring into the origin of the scales in use, as, for instance, for loss of an eye, 25 to 33½ per cent; loss of the right arm, 75 per cent, etc., one will be surprised to find that none of them is based on systematic observation of facts, i. e., of the actual earnings made by persons who have suffered such injuries.

At the beginning of compulsory workmen's accident insurance the insurance institutes had merely adopted the compensation scales contained in the insurance contracts of private insurance companies, but quite generally increased the rates of compensation. Likewise, the scales of the private insurance companies (so-called scales for injuries to members of the body, *Gliedertaxe*) were not based on observation of actual conditions, but represent merely assumptions on which the two contracting parties have agreed. One is, therefore, mistaken in assuming that the usual compensation scales represent averages deduced from actual conditions, and that by small increases or decreases of the rates of these scales full justice can be done to the individual conditions of injured persons. The medical experts, who as a rule have no knowledge of the actual earnings of a large number of persons afflicted with a certain infirmity, of course, uphold the traditional scales of compensation which are also adopted by the courts of arbitration. In the case of insurance institutes which also consider the earning possibilities of pensioners the officials charged with the determination of the amounts of compensation, supported by observations of their own, often have doubts as to the value of the usual compensation scales, but, on account of the pressure in favor of maintaining existing conditions brought to bear upon them by tradition

and by medical experts, they are hardly able to achieve results. This would only be possible if a general systematic observation of the pensioners should be introduced and the results scientifically compiled. Neither in Austria nor in Germany has this so far been attempted.

At any rate, in the case of several insurance institutes, the valuation of consequences of accident is no longer left entirely to the medical experts. In addition to the medical opinions these institutes consider the earnings of the injured persons after the accident and the experiences of other persons similarly injured.

It might be supposed that in the courts of arbitration less weight is given to the medical opinion because the presiding judge is assisted by four associates taken from practical life. In fact, it has been shown that the courts of arbitration deviate only in exceptional instances from the medical opinion. As a rule the court of arbitration simply adopts the rate of compensation proposed by the physician, and in case the physician in his proposed rate has left open a certain range, as, for instance, 15 to 25 per cent, it generally awards the higher rate, and in some instances goes even beyond that.

It has already been remarked that no uniform judicature exists in the Austrian accident arbitration courts; even in one and the same court of arbitration the legal point of view of the individual senates on important questions varies greatly. On the whole it may be said that in the procedure of the courts of arbitration, the determination of the degree of disability is governed more by the medical opinions than is the case in the practice of the insurance institutes. An explanation of this apparently strange phenomenon may be found in the fact that the laymen associates of the courts of arbitration are frequently less familiar with the legal provisions and, on the one hand, are not acquainted with such a great number of individual cases as the officials of the insurance institutes charged with the determination of compensation, and, on the other hand, do not have the general knowledge of the numerous and manifold activities of workmen, which seems to have been assumed by the legislator. In this connection it should be especially mentioned that a consolidation of the appealed claims for compensation according to related industries, and a corresponding selection of the associates for the senate in question is not practical; on the contrary, cases belonging to the most widely differing industries are argued in one session. If, for instance, in a senate a technical expert of the textile industry and one of the iron and steel industry sit as associates, these associates can not be considered as experts if accidents in flour mills, or in the wood-pulp industry, or in printing establishments, etc., are in ques-

tion, but they must, nevertheless, render judgment in such cases. It must also be remarked here, with special stress, that observations made only occasionally do not give as reliable a basis for the formation of an opinion as do a large number of systematic observations.

From this discussion it is shown that the theoretically undisputed view that it is not the visible injuries in themselves but their injurious influence upon the earning capacity of the injured person which are decisive for the purposes of compensation, has not been realized in practice, and that the medical estimates of the degree of invalidity, which of course consider almost exclusively the visible injuries, govern the compensation practice, and this, too, is the case in the arbitration courts far more than among the insurance institutes. It logically follows from these conditions that adjustment to the consequences of injuries is only in a small measure considered in the determination of compensations. If the insurance institute has by means of observations ascertained that the pensioner is no longer hindered in his industrial activity through the consequences of the accident (which have not visibly or essentially changed) and reduces his pension, and the pensioner appeals to the arbitration court, the latter in 90 out of 100 cases awards the former pension if the medical experts render an opinion that the consequences of the accident have undergone no change.

As a consequence there exists to-day a wide disagreement between theory and practice, the removal of which may, in our opinion, be expected only in case the compensation rates are based on a general systematic observation of the earning capacity of the pensioners. We repeat here that the actual industrial activity of the injured person should not and need not be exclusively decisive in the determination of the compensation in any individual case, if only for the reason that otherwise the diligent workman who performs his work in spite of a handicap fares worse than the workman who relies upon a pension from the insurance institute.

Again, we assert with particular emphasis that the fact that a workman is continued in employment in the same establishment at the same wages should not be taken as sufficient reason for denying him compensation. The theoretical considerations which speak against such a practice have already been given on a previous page. From a practical point of view the following should be added: If an insurance institute should adopt the practice of making the award of a compensation conditional on a decrease in the earnings, it would, of course, never be difficult for an injured person who is an applicant for a pension to lessen his earnings. In order to prevent abuses the insurance institute would be compelled to keep its

numerous pensioners under continuous observation. If the institute, on becoming aware that a pensioner is again in receipt of the same earnings as an uninjured workman of like occupation, withdraws the pension, it might occur that after a brief period the injured workman would again make a claim for compensation by reason that his earnings have now decreased as a consequence of the accident. If one further considers that the earnings even of a sound workman are dependent on various circumstances within and outside of his person, one will be convinced that the above practice can not be maintained for any length of time.

SYSTEMATIC OBSERVATION OF THE INDUSTRIAL ACTIVITY OF WORKMEN IN RECEIPT OF ACCIDENT PENSIONS.

Of vastly different importance are conclusions arrived at by means of systematic observation of a large number of pensioners. For instance, if, on observation of all machinists who have lost the index finger of the right hand, it is found that in the first year 90 per cent of them suffer a loss in earnings of between 5 and 15 per cent, no injustice would be done by awarding to persons having suffered a like injury a pension corresponding to a 15 per cent decrease of earning capacity.

Persons who have made the representation of the workmen's interests a special task have expressed apprehension that the proposed systematic observations may lead to a far-reaching reduction of the compensation rates now in use. This view may rise either from the silent admission that the compensation rates now in use exceed the damages actually caused or from the apprehension that the results of these observations may be misused to force the pensions down to a lower level. With respect to the first possibility it might be argued that in this case the law would not be applied according to its wording and spirit and that those who are obligated to contribute the means for the insurance would be illegally and therefore unjustly burdened. But even if we leave this aspect out of the question, we must figure with the possibility that occasional observations made on individual injured persons, who, although apparently seriously injured, continue to work in their trade without inconvenience, may also be extensively utilized as the basis of generalizations far beyond what could rightly be based on such individual cases. It is by no means intended that a person who is not professionally engaged in the determination of consequences of accidents may draw general conclusions from a few observations made occasionally, and try to apply them in practice. Because he has seen in a quarry a man at work

who had lost his left hand, he may be induced to believe that quarrymen are, even after loss of the left hand, generally able to continue in their trade. If he had had opportunity to observe a larger number of men afflicted with the same infirmity, he would have been spared from making such an erroneous conclusion. For the determination of the degree of adjustment to the consequences of injuries here in question it is especially important that the greatest possible number of persons having suffered a specific injury be taken under observation. The danger of the incorrect use of observed facts is always greatest where the amount of data is small. The more extensive the data, the more do inherent accidental variations counterbalance one another, and the more free, therefore, from danger of subjective errors become the conclusions drawn from these data.

Systematic observation of the earning capacity of persons injured as a consequence of accident is especially possible where compensation is effected by means of pensions, and the residence of the pensioner and his earnings may at any time be ascertained. The method of observation must always be adapted to local conditions and special consideration must be given to the reliability of the various informants. It is obvious that information furnished by the pensioners themselves does not always fully correspond to the facts, but is unfavorably colored. Nor is the information obtained from the employers always correct; likes and dislikes here play a great part. While one employer, in the manifest attempt of aiding the injured workman in obtaining a high pension and at the same time of putting himself in a good light with his working force, exaggerates the consequences of the accident and claims that it is merely pity which induces him to employ the injured workman, another employer is only too much inclined to attribute the lessened efficiency of the injured workman to his laziness or to his shamming of disability in order to obtain a higher pension. Like caution must be observed with respect to the information obtained from communal and police authorities. Whosoever has some experience in these matters and pays proper consideration to the medical opinions will experience no difficulty in ascertaining in what instances a thorough investigation of such information is necessary. The material importance of the case is frequently great enough to justify the expenditure involved in the detailing of a supervisory official of the insurance institute to make a local investigation.

The movement of introducing systematic observation of the earning capacity of persons injured as a consequence of accidents has been opposed from many sides by those who do not approve of a fixed scale for injuries to members of the body (*Gliedertaxe*). This has

also been shown in Austria in the discussion now taking place on the social insurance bill. The program for the reform and extension of workmen's insurance published in December, 1904, did not provide for any change in this respect. Article 174, however, of the social insurance bill introduced on November 3, 1908, contained the following provision:

The minister of the interior is herewith authorized to decree provisions by means of administrative order which determine the maximum and minimum rates of compensation to be granted according to (b), i. e., in case of partial disability.

The committee on social insurance disapproved this provision, but a second bill now under discussion contained the same provision with the following amendment:

The representatives of the employers and of the insured persons are to be heard separately before such an order may be issued.

Up to the present hour this bill has only been discussed in the subcommittee of the committee on social insurance, and the above paragraph has been approved with the following amendment:

If these hearings should show that the majority of the representatives of the employers or of the insured persons are opposed to such an order its issuance is not permissible.

The opposition on principle to a scale of compensation for all typical consequences of injuries which takes all conditions into account is not quite intelligible. For, as a matter of fact, even at the present date, certain rates of compensation with unimportant deviations are generally in use. They are merely not recognized officially, and in individual instances it is therefore possible to deviate from them without having to give any reason for doing so. Such a state of affairs is hardly advantageous for the application of accident insurance, and especially where, as in Austria, an appellate body from the courts of arbitration does not exist. Where the composition of the senates changes (and it is a known fact that identical cases have been differently decided by different senates), there is a great danger that the injured persons and their attorneys will be led by the thought that there is always a possibility of success. It has been frequently observed that as long as his claim was pending in the court of arbitration an injured person did not work in his former place of employment, pretending that he could not perform his work, but reported for work as soon as a decision was rendered by the court. Sometimes the claim for compensation had no success at all in the court of arbitration and at other times the success was so unimportant that it fell far short of counterbalancing the loss of wages which the injured person had meanwhile suffered.

It is a fact generally known that in the case of some injured persons the desire to obtain the highest possible pension even assumes the form of a disease. The so-called pension mania (*Rentenhysterie*) has for some time been the subject of serious concern. It has frequently been asserted that the form of compensation, i. e., the payment of pensions, is to blame for this evil, and lump-sum payments have been recommended as a remedy. But the expediency of this remedy must be doubted, even if it is left out of consideration that in the case of serious consequences of injuries the permanent economic existence of the injured persons can only be assured by means of a pension. In our opinion very many, if not all, of the cases of pension mania could be avoided from the outset if the injured persons themselves could judge on the basis of the visible consequences of the injuries what compensation they might rightly expect. This would be possible if compensation rates were determined for the principal consequences of injuries, in which a range could be left for the consideration of special conditions of the individual injured person (occupation, age, sex, etc.).

Even if the last remarks have extended into the greater sphere of accident compensation in general, it may be asserted that they apply also to the determination of adjustment to injuries, the question particularly under discussion here.

The above discussion may be condensed into the following conclusions:

1. Under habituation or adjustment to the consequences of injuries is to be understood that condition in which the victim of an accident through the more intensive use of other parts of the body or of other organs so far equalizes serious injuries to parts of the body or to organs of sense that his earning capacity is not diminished at all, or in an essentially smaller degree than would otherwise be the case.

2. According to the wording and tendency of the laws regulating workmen's accident insurance in Austria the injury to the body is not itself decisive for the determination of the compensation of the injured person, but the lessened earning capacity consequent to it.

3. This conception is, however, only in a smaller measure realized in the Austrian accident compensation practice, for in case of unchanged visible consequences of the injury the pension is in most cases also left unchanged. This procedure is chiefly conditioned through the judicature of the courts of arbitration whose decisions may not be appealed to a higher body.

4. The contradiction between the contents of the legal provisions and the actual compensation practice may be explained by the fact that the measure for the determination of the consequences of acci-

dents has not been deduced from observation of the earning capacity of accident pensioners, which explains also the predominating influence of the medical opinions upon the determination of the degree of invalidity.

5. A basis for a compensation practice corresponding to the legal provisions in general and for a fair consideration of adjustment to the consequences of injuries in particular may be obtained through systematic observation of the earning capacity of the largest possible number of accident pensioners, which so far has not been introduced.

The earning capacity of an individual injured person at a specified date can neither from a theoretical point of view nor for practical considerations alone be decisive in the determination of the compensation. The fact that an injured person makes identical earnings at identical labor after the accident as before the accident should not lead to the conclusion that he has not been injured through the accident.

6. The method of investigation of the earning capacity of injured persons must be adapted to the organization of the insurance and to special conditions in the individual territories of the insurance institutes.

The second part of this article contains a summary compilation of 96 cases in which adjustment to the consequences of injuries may be assumed with more or less justification. The data given in the table were obtained from the workmen's accident insurance institutes by means of schedules which, in addition to the questions prescribed in the *Bulletin des Assurances Sociales*, contained the following questions: "Nature of occupation: Occupational training and possible permanent supplemental occupation." "Consequences of injury: Complication through infirmities not caused by the accident." Both of these questions relate to circumstances which should be considered in determining the compensation. If a person has through an accident been deprived of the possibility of making considerable earnings by means of a supplemental occupation, which he has exercised in addition to the occupation subject to insurance, he should be awarded a higher compensation. A higher compensation should, likewise, be awarded if the effect of the injury caused by the accident on the earning capacity is increased through an infirmity not connected with the accident; for instance, decrease in the visual capacity of one eye if that of the other eye had been less than normal before the accident, or loss of the right index finger if the middle finger had been partially disabled before the accident. Decrease of the earning capacity to a lesser extent should, on the other hand, be assumed if an organ which was already partially disabled before the accident has been

affected by the injury; for instance, loss of an eye, the visual capacity of which was already lessened, while that of the other uninjured eye is perfectly normal; or loss of a stiffened finger.

The last question contained in the schedule of the bulletin, "On what is the new determination based (medical opinion or other basis)," has not been included in the present compilation. In this respect it may be said that the new determination is with rare exceptions nearly always preceded by a new medical examination. In so far as the determination of the earning capacity is concerned, the procedure has not always been described in detail in the schedules, and the description would, moreover, not be of any special value because the procedure must be adapted to local conditions.

The annual earnings are always given in crowns. The degree of decrease of the earning capacity has been shown in per cents, according to the general practice. The fractions of these per cents always correspond to easily comprehensible fractions of the unit ($33\frac{1}{3}$ per cent = $\frac{1}{3}$; $8\frac{1}{3}$ per cent = $\frac{1}{12}$, etc.), from which result whole per cents of pension; for $33\frac{1}{3}$ per cent disability a 20-per cent pension, for $16\frac{2}{3}$ per cent disability a 10-per cent pension, for $41\frac{2}{3}$ per cent disability a 25-per cent pension, etc. There were only a few cases in which the first determination of the degree of disability was appealed to the court of arbitration. These cases have been marked in the table by showing the determination of the court of arbitration in per cent prefixed by the letters "c. a." A much larger number of instances were reported in which revisions of the first determination were appealed to the courts of arbitration. In such instances the determination made by the court of arbitration in addition to that made by the insurance institute is always shown. In this connection, however, it should be remarked that the small number of appeals reported by individual institutes gives rise to the assumption that the information as to whether an appeal was taken to the court of arbitration and with what success may now and then through some misunderstanding have been omitted.

The cases enumerated in the following table are with few exceptions of considerable interest for the compensation practice in general, but only some of them are of importance for the particular question of adjustment here under discussion, if the interpretation of adjustment is to be governed by the definition given above. If one intends to be very accurate in this respect it will be necessary that data as to the consequences of the injuries at the time of the revision based on the medical opinion also be requested. If this is not done there is always a possibility that cases will be included in which there is not a gradual adjustment to essentially unchanged conse-

quences of injuries, but a gradual improvement in the consequences of injuries themselves. This conjecture is certainly suggested by some of the cases included in the table, but the removal of these doubts by means of new information obtained from the insurance institutes was not practicable.

The sequence of the cases, according to the consequences of the injuries, corresponds to the practice adopted in the publications of the German imperial insurance office.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
1	Engineer, steam thrashing machine.	Dec. 13, 1912	54	<i>Crowns.</i> 1,500	Right thumb.	Laceration and contusion.	Lessened mobility of first joint.
2	Thread picker, cotton spinning mill.	Aug. 11, 1910	54	675	Back of right hand and thumb.	Lacerated wound and rupture of the tendons.	Right thumb cicatrized, can not be normally extended.
3	Bricklayer, building enterprise.	Oct. 31, 1907	28	1,138	Right thumb.	Wound from a cut.	Loss of distal phalanx, blunt wound, tender and sensitive.
4	Stonecutter, tombstone-cutting establishment.	Jan. 4, 1899	26	878	.....do.....	Contusion.....	Partial loss of the distal phalanx, nail rudimentary, mobility of distal phalanx limited.
5	Day laborer, steam sawmill.	July 28, 1908	24	688	.....do.....	Cut.....	Loss of distal phalanx, sensitive stump, nearly stiff.
6	Ironworker (by trade, machinist), tube rolling mill.	May 14, 1903	18	719	.....do.....	Compound laceration and contusion.	Stiffness of first phalanx and immobility of distal phalanx, distal phalanx removed by operation 1½ years later.
7	Iron turner, machine factory.	Sept. 3, 1890	29	1,241	.....do.....	Flesh wound 3 centimeters long on second phalanx opening the joint.	Stiffness of second joint at obtuse angle.
8	Machine hand, wire, leaden goods, and nail factory.	June 28, 1892	18	329	.....do.....	Crushing of the bone and of the fleshy parts.	Loss of the entire right thumb.
9	Day laborer, sawmill.	Dec. 5, 1894	27	360	.....do.....	Cut.....	Loss of thumb up to metacarpal bone.
10	Weaver, cotton-weaving mill.	Apr. 26, 1909	22	532	Right index finger.	Crushing of final phalanx.	Truncation and stiffness of distal phalanx.
11	Mirror plater, plate-glass and mirror factory.	Jan. 18, 1911	33	1,230	.....do.....	Contusion.....	Scar on inside of hand, pain in finger, atrophic, stiffness of intermediate phalanges.
12	Master sizer, weaving mill.	July 17, 1900	44	1,744	.....do.....	Jagged wound.	Ankylosis in second phalanx, stiffness of third phalanx, rigid in extended position.
13	Day laborer, railroad construction.	June 5, 1899	33	870	.....do.....	Contusion.....	Loss of half the tip of the finger, stiffness in all joints.

TO THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
4	8½	.....	6	Same as before accident.	<i>Crowns.</i> 1,800	0	.....	.....	1
3	15	2	8	Wool mixer, same establishment.	660	8½	8½	.....	2
5	25	5	1	Same as before accident.	1,680	0	0	.....	3
2	20	{ (a) 1 (b) 10	..... 4	}do.....	{ (1) 1,141	15 8½	.....	.....	4
4	33½	4	2	Laborer in a chemical factory.	837	0	.....	.....	5
6	15	{ (a) 3 (b) 8	..... 6	} Machinist in same establishment.	{ 840 1,582	19 (15)	15	Determination on occasion of a second accident.	6
2	35	{ (a) 1 (b) 19	5 7	Iron turner..... Master turner, same establishment.	(1) 1,400	0 10	15 .....	.....	7
2	35	6	2	Same as before accident.	675	35	.....	Determination on occasion of a second accident; in same occupation.	8
2	33½	4	5	Sawyer, same establishment.	484	33½	.....	Determination on account of an injury to a foot; same establishment.	9
1	{ 8½ c. a. 20	(a) (b) 3	8	Same as before accident. Weaver, in a foreign establishment.	(1) 780	8½ 0	.....	.....	10
2	20	1	10	Same as before accident.	1,352	0	0	.....	11
5	25	11	11	.....do.....	2,012	0	.....	.....	12
2	25	13	6	Day laborer, in another establishment.	1,260	0	.....	.....	13

¹ Un changed.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
14	Day laborer, sawmill.	Mar. 23, 1905	35	<i>Crowns.</i> 540	Right index finger.	Lacerations and contusions.	Loss of 1½ phalanges.
15	Female worker, chemical factory.	Nov. 2, 1905	15	120	.....do.....	(?).....	Loss of 1½ phalanges.
16	Oiler boy, paper mill.	May 6, 1903	18	480	.....do.....	Contusion.....	Loss of 2 phalanges.
17	{ Stamper, enameled ware factory.	{ Sept. 15, 1897	31	675	.....do.....	{ 2 phalanges torn off.	{do.....
18	Machinist, of electric machinery and apparatus factory.	Dec. 4, 1899	29	2,057	Right middle finger.	Contusion.....	Loss of nail, club-like enlargement, scarred malformation and sensitiveness of third phalanx.
19	Machine hand, furniture factory.	Apr. 7, 1899	29	709	.....do.....	Separation of a phalanx.	Loss of distal phalanx, sensitiveness of stump.
20	Machine hand, passerie works.	Mar. 21, 1907	27	898	.....do.....	Laceration with subsequent phlegmon.	Stiffness of finger in a curved position.
21	Carpenter, building enterprise.	Sept. 6, 1901	48	690	.....do.....	Cut.....	Shortening of finger by 2½ centimeters.
22	Day laborer, steam sawmill.	Sept. 23, 1911	20	623	.....do.....	Contusion.....	Loss of 2 phalanges.
23	{ Oiler, weaving mill.	{ Apr. 26, 1910	41	788	{ Right little finger.	{ Fracture.....	Loss of finger.....
24	Boiler maker, boiler factory.	Mar. 14, 1912	42	888	Right index and middle fingers.	Contusion of the third phalanx.	Loss of half of third phalanx of middle finger, cicatrization of third phalanx of middle finger.
25	{ Dairy wagon driver, injured while operating a chaff cutting machine.	{ Feb. 3, 1905	22	522	.....do.....	.....do.....	{ Loss of third phalanx of index and middle fingers, sensitiveness of scarred stumps.
26	{ Machine oiler, tube rolling mill.	{ Aug. 7, 1901	31	1,145	.....do.....	{ Crushing of the third phalanx of the index finger, and laceration and contusion of the middle finger.	{ Loss of third phalanx of index finger, stump stiff; middle finger stiffened; both fingers rigid in extended position.
27	{ Laborer, sawmill.	{ Dec. 6, 1899	19	270	{ Right index, middle, and ring fingers.	{ Contusion and laceration.	{ Loss of third phalanx of the index finger, sensitiveness of the stump in second phalanx; sensitiveness of middle finger.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			Insurance institute.	Court of arbitration.		
24	{ 16 c. a. 20 }	5	-----	Mine laborer.....	<i>Crowns.</i> 840	0	0	-----	14
3	40	{ (a) 1 (b) 4 }	9 4	{ Unemployed..... Laborer in a canning establishment.	{ ----- 288 }	20 0	-----	-----	15
1	20	{ (a) ----- (b) 10 }	11	{ (?) Beater helper in another mill.	{ (?) 780 }	10 0	-----	-----	16
2	{ 15 (ca) 20 }	15	-----	{ Planisher in same establishment.	{ 819	15	-----	{ Had in a previous accident lost 2 phalanges of little finger of left hand.	17
2	8½	12	11	Master stamper in another establishment.	2,804	0	-----	-----	18
4	10	1	6	Same as before accident.	(1)	0	-----	-----	19
4	30	6	7	Galloon maker in a furniture trimmings factory.	1,138	0	-----	-----	20
6	20	11	10	Carpenter in another building enterprise.	1,140	0	-----	-----	21
3	10	1	4	Helper in a brewery.	927	0	0	-----	22
3	{ ca 10 10 }	-----	8	{ Same as before accident.	{ (1)	0	0	-----	23
4	25	1	-----	Same as before accident.	926	0	-----	-----	24
2	10	{ (a) 1 (b) 3 (c) 4 }	5 5 5	{ Same as before accident.	{ 342 342 664 }	25 20 10	-----	-----	25
3	20	{ (a) 3 (b) 8 }	----- 8	{ Engineer in same establishment.	{ (1) 1,480 }	15 8½	-----	-----	26
3	50	{ (a) 1 (b) 8 }	----- 3	{ Same as before accident.	{ 360 642 }	25 25	-----	-----	27

1 Unchanged

[751]

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
28	Machine hand, skilled turner, brushwood factory.	Apr. 13, 1899	32	<i>Crowns.</i> 387	Right middle and ring fingers.	Complicated fractures.	Loss of third phalanx of middle and ring fingers.
29	Helper, brewery.	Aug. 26, 1899	28	1,226	Right ring and little finger.	Contusions....	Ring finger stiffened in second and third phalanx; little finger thickened in first phalanx and stiffened in other phalanges.
30	Calico printer, calico printing establishment.	July 23, 1894	17	832	.....do.....	.....do.....	Loss of both fingers.
31	Female worker, cordage factory.	June 27, 1912	19	354	Right thumb and back of hand.	Contusion.....	Scar on back of hand; thumb shortened, stiff, atrophied; second and third metacarpal bone thickened.
32	Machinist, agricultural implements factory.	Jan. 7, 1910	20	803	Right index, middle, and ring finger.	Lacerations and contusions.	Distal phalanx of index finger scarred and stiffened; middle finger thickened and stiffened; back of ring finger scarred.
33	Journeyman carpenter, electrical machinery and appliances factory.	Apr. 4, 1900	23	1,413	Right middle finger.	Contusion.....	Loss of third phalanx of middle finger, stump atrophied, rigid in extended position; ring and little fingers also partially rigid in extended position.
34	Day laborer, sawmill.	Aug. 17, 1906	17	420	Right hand...	Cuts.....	Loss of thumb, of phalanges of index finger, of 2 phalanges of middle finger, and of third phalanx of ring finger.
35	Fireman, electrical machinery and apparatus factory.	Apr. 13, 1899	26	1,327	.....do.....	Laceration and contusion of back of the hand.	Back of hand thickened, slightly edematous; first phalanges of index, middle, ring, and little fingers so stiffened that fist can not be formed.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
2	40	{	(a) 1	Same as before accident.	<i>Crowns.</i> 300	10	30	{	28
			(b) 10	Machine hand in another establishment.	919	10	.....	
2	16½	13	.....	Pieceworker in a brick kiln.	936	8½	.....	29
15	33½	7	8	Operating official in a brewery.	2,400	10	.....	30
4	75	.....	8	Same as before accident.	390	33½	33½	31
1	75	3	.....	Machinist, in another agricultural implements factory.	1,131	0	0	32
4	25	13	6	Carpenter, in another establishment.	2,100	10	.....	33
4	80	7	.....	Forest worker at wood cutting.	1,200	30	.....	34
2	50	13	5	Fireman, in another establishment.	1,650	8½	Tremor of the hands not caused by the accident.	35

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
				<i>Crowns.</i>			
36	{Log peeler, wood - pulp factory.	{June 25, 1907	17	688	Right hand...	{Cut on back of hand, severance of third and fourth tendons.	{Deformity of third and fourth metacarpal bone; ankylosis of first phalanx of all fingers with exception of the thumb.
37	Laborer (skilled machinist), shade and Venetian blind factory.	Apr. 18, 1899	31	900	Right index, middle, ring, and little fingers.	Lacerations...	Scarred deformity of third phalanx of index, middle, and little fingers; second and third phalanges rigid in extended position, stiffening of these phalanges of the ring finger, atrophy and sensitiveness of all fingers.
38	Machine hand, nail factory.	Oct. 4, 1899	23	768	.....do.....	Contusion....	Stiffness of index and little fingers; loss of 2 phalanges of middle and ring fingers.
39	{Day laborer, ice company.	{Sept. 28, 1904	51	728	Right thumb..	{Contusion, subsequent phlegmon.	Musculature of upper arm lessened; stiffness of the third phalanx of little finger; partial stiffness of other fingers.
40	{Assembler, machine factory.	{July 2, 1909	26	3,215	Left thumb...	{Cut; severance of tendon.	{Stiffness in both joints caused by scars.
41	Factory hand, leather factory.	Oct. 12, 1912	61	790	.....do.....	Cut.....	Thumb thickened, limited motion, small fistula on second joint.
42	Blaster, underground construction.	May 8, 1907	33	1,386	.....do.....	Compound fracture.	Ankylosis in distal joint; first joint stiffened.
43	Machine hand, furniture factory.	June 5, 1899	33	1,455	.....do.....	Cut.....	.....
44	{Glass sorter, glass factory.	{July 2, 1909	43	708	.....do.....	{Punctured wound.	Loss of distal phalanx.
45	Day laborer, malt house.	Oct. 31, 1898	37	603	.....do.....	Contusion and laceration.	Stiffness in both phalanges in extended position. Deformity of first phalanx.
46	Straw cutter, paper mill.	Nov. 26, 1895	30	797	Left index finger.	Serious contusion.	Loss of two phalanges.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
					<i>Crowns.</i>				
7	0 (ca) 50	(a) 1 (b) 3 (c) 5	..... ..... .....	Same as before accident. Table man, plate mill.	720 780 1,200	33½ 20 15	41½ 20 .....	.....	36
4	60	13	1	Market helper in another establishment.	(?)	8½	.....	Suffers from heart disease not caused by the accident.	37
4	50	9	.....	Laborer, stock rooms of same establishment.	708	40	.....	.....	38
3	75	(a) 1 (b) 3 (c) 4	..... ..... .....	Day laborer in various establishments.	600 720 720	66½ 50 25	..... ..... .....	.....	39
1	10	(a) 1 (b) 4	..... .....	Same as before accident.	(1)	8½ 0	..... .....	.....	40
3	16½	.....	10	do.....	(1)	0	.....	.....	41
2	9	7	.....	do.....	1,815	0	.....	.....	42
2	25	13	4	do.....	1,740	16½	.....	.....	43
1	15	(a) 1 (b) 4	..... .....	Day laborer, employed in unloading. Auxiliary packer in same establishment.	619 720	10 0	..... .....	.....	44
2	20	10	2	Day laborer, well-boring enterprise.	780	8½	.....	.....	45
12	15	18	.....	Adjuster, iron and steel works.	1,140	0	.....	.....	46

¹ Unchanged.

[755]

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
47	Female packer, tobacco factory.	June 19, 1900	23	<i>Crowns.</i> 493	Left index finger.	Cut.....	Bending capacity of finger reduced one-half, atrophy.
48	{ Yard man (has learned shoemaker's trade), saw mill.	{ Mar. 1, 1907	29	528	.....do.....	Contusion.....	{ Shortened 1 centimeter; loss of third phalangeal bone; distal phalanx in bent position.
49	Machine oiler, flour mill.	Feb. 8, 1901	23	800	Left hand.....	Laceration and contusion of back of hand.	Scars above second metacarpal bone, index finger shortened, rigid in extended position. Arm weakened.
50	{ Journeyman carpenter, mechanical woodworking shop.	{ 1899	20	480	{ Left middle finger.	{ Cut.....	{ Loss of two phalanges.
51	Day laborer, firewood sawing.	..... 1901	19	391	Left ring finger.	.....do.....	Loss of two phalanges.
52	Master mechanic in a fertilizer plant.	July 10, 1909	30	1,923	Left little finger.	Compound fracture.	Callous thickening of the first joint; middle joint rigid in extended position.
53	Day laborer, sawmill.	Mar. 19, 1909	27	600	Left index and middle fingers.	Cuts.....	Loss of third phalanx of both fingers.
54	Engine tender, fire-clay goods factory.	Jan. 8, 1904	35	979	.....do.....	Contusion.....	Loss of half the distal phalanx of index finger and of two phalanges of middle finger.
55	{ Turner, agricultural machines factory.	{ Nov. 20, 1908	59	636	.....do.....	.....do.....	{ Stiffness of index finger; loss of distal phalanx of middle finger and stiffness of stump.
56	Carpenter, machine shop.	May 1, 1912	41	991	Left index and ring finger.	Cuts.....	Stiffness of both fingers.
57	Machinist, locomotive factory.	July 16, 1913	20	1,066	Left ring and little fingers.	Contusion.....	Loss of ring finger with exception of thickened stump sensitive to pressure; stiffening of little finger.
58	Helper, machine factory.	Sept. 4, 1911	20	1,218	.....do.....	Laceration and contusion.	Loss of two phalanges of ring finger, scarred deformity and stiffness of final phalanx of little finger.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			Insurance institute.	Court of arbitration.		
7	40	11	10	Employed in cigarette department of same establishment.	<i>Crowns.</i> 1,008	0	.....	.....	47
4	33½ { (a) 2 (b) 2		2 8	Stamper in enameled-goods factory.	{ 724	15 10	.....	.....	48
5	c. a. 60	12	2	Helper in same establishment.	1,080	33½	.....	.....	49
(?)	{ 10 c. a. 10 }	10	.....	{ In business for himself as carpenter. }	.....	5	.....	.....	50
(?)	10	11	.....	Forger in a foreign establishment.	.....	0	.....	.....	51
1	8½	3	.....	Same as before the accident.	2,856	5	.....	.....	52
3	15	4	6	Day laborer in hop export house.	900	0	.....	.....	53
4	25	9	.....	Same as before accident.	1,137	0	.....	.....	54
3	25 { (a) 1 (b) 3		6 6	{ At first borer in same establishment, later on same occupation as before accident. }	{ 704 (?) 660	20 15	.....	{ Index finger again usable. }	55
2	25	.....	8	Same as before accident.	1,050	0	0	.....	56
2	15	.....	3	.....do.....	(1)	0	.....	.....	57
7	15	.....	11	Machinist in another establishment.	1,500	8½	8½	.....	58

¹ Unchanged.

[757]

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
59	Journeyman carpenter, mechanical woodwork- ing shop.	Sept. 18, 1899	21	<i>Crowns.</i> 734	Fingers of left hand.	Cuts.....	Stiffness of thumb, rigidity and soreness of index and middle fingers.
60	Journeyman carpenter, woodwork- ing shop.	Sept. 19, 1908	21	1,050	Left index, middle, and ring fingers.	Contusions....	Loss of third phalanx of index and middle fingers, of 1½ phalanges of the ring finger, flexibility of stumps limited.
61	Female worker, silk goods factory.	Dec. 14, 1910	35	444	Left index finger.	Puncture, subsequent phlegmon.	Index finger atrophied and stiff; middle, ring, and little fingers stiffened.
62	Manager, saw-mill.	Mar. 17, 1911	56	2,400	Left middle and ring fingers.	Contusion.....	Partial stiffness of the index finger, loss of third phalanx of the middle and ring fingers, curvature of little finger.
63	Machine hand, bentwood furniture factory.	Sept. 18, 1909	18	812	Left index, middle, ring, and little fingers.	Lacerations and contusions.	Distal phalanx of index finger truncated, distal joint stiffened; loss of distal phalanx of middle and ring fingers; truncation of distal phalanx. Stiffness of fingers prevents tight closing of hand.
64	Carpenter, bentwood furniture factory.	Dec. 17, 1906	37	1,346	Left index, middle, and ring fingers.	Cuts.....	Loss of two phalanges of index and middle fingers, stump of latter stiff; loss of distal phalanx of ring finger, the stump of which is stiff in the middle joint at an obtuse angle; little finger stiff in the middle joint at a right angle.
65	Apprentice bricklayer, building enterprise.	Aug. 16, 1909	16	¹ 600	Left hand.....	Fracture.....	Stiffness of thumb; atrophy of other fingers and of wrist; adherent scar in hollow of the hand 12 centimeters long.

¹ Computable earnings of apprentices.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
	33½	10	7	Journeyman carpenter in another establishment.	Crowns. 1,387	25			59
2	50	(a) 1	1	Carpenter in another establishment.	624	33½	40		60
		(b) 4	1	Journeyman carpenter. Later on in business for himself.	1,020	33½	40		
4	50	2	8	Same as before accident.	510	16½	16½		61
4	50		11	.....do.....	(1)	0	0		62
2	40	(a) 1		In same establishment: At lighter work...	578	25			63
		(b) 3		Fireman helper...	971	15			
9	66½		6	Unemployed.....		50	60	Met with a second accident while employed at a cutting machine on Oct. 10, 1906. Annual earnings 1,377 crowns.	64
50	50	(a) 1	9			33½			65
		(b) 2	9			20			
		(c) 3	9	Bricklayer in another establishment.	960	10			

¹ Unchanged.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
66	Assembler, electric lighting and power transmission establishment.	Mar. 25, 1901	40	<i>Crowns.</i> 1,772	Both hands...	Burns.....	Brown pigmentation on fingers of right hand. Left hand: Flat, hard, adhering scar in thumb fold, thumb rigid, even abduction impossible, index finger only partially flexible.
67	Crane helper (by trade, blacksmith), cast-steel works.	Apr. 30, 1900	28	948	.....do.....	Deep contusion and laceration of tendons.	Right hand: Extensive scars on back and in hollow, fingers with exception of thumb stiffened. Left index fingers stiffened.
68	Factory hand (by trade, tailor), manufacture of waterproof fabrics and paper.	Aug. 26, 1907	20	514	{Head, back, and both hands.	{Burns.....	{Tender scars on back of both hands inclusive of fingers.
69	Machine oller, spinning mill.	Mar. 22, 1910	30	605	Right forearm.	Fracture, laceration, and contusion.	Callus in the middle of the forearm, which is bent concavely toward the thumb side.
70	Bricklayer, building enterprise.	Oct. 17, 1907	34	819	Left forearm..	Fracture above the wrist.	Weakness of arm subsequent to badly healed fracture of ulna.
71	Laborer, brewery.	Mar. 9, 1900	32	1,616	Left arm.....	Laceration....	Three hypertrophic painful scars 20 cm. long and 2 cm. wide on elbow caused by incisions. Flexibility and extensibility lessened, strength reduced.
72	{Apprentice miller, flour mill.	{..... 1890	20	396	.....do.....	(?)	{Loss of forearm by amputation.
73	Laborer (by trade, blacksmith), cast-steel works.	Aug. 11, 1906	27	1,138	Right foot.....	Complicated fracture of the great toe.	Loss of distal phalanx, sensitiveness of stump.
74	{Furnace helper, plate iron and wire rolling mill.	{Jan. 6, 1910	27	948	Left foot.....	{Contusion of the great and the second toe.	{Thickening, stiffness, and soreness of great toe.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
2	41½	12	1	Assembler in another establishment.	Crowns. 2,089	10			66
4	50	12		Independent farmer and teamster.	(?)	40			67
{	3 { 33½ c. a. 60	(a) 1		{Temporarily laborer in a nail factory, rest of the time weaver in other establishments.	330	50		{	68
		(b) 3			570	33½			
		(c) 5			624	20			
7	40	1	8	Factory hand in jute spinning mill.	1,059	0	0		69
5	25	4	6	Bricklayer in another establishment.	832	10			70
5	40	13		Same as before accident.	1,688	8½			71
{	(?)	83½ {	10	{Draftsman in Government office.	1,440	83½		{	72
			20						
6	20	1	6	Same as before accident.	1,478	0	15		73
{	2	(a)	9	{Not permanently employed.		15		{	74
		b 1	9			10			
		c 3	9			(1)	0		

1 Same as before accident.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
75	Scaffold carpenter, building enterprise.	Sept. 20, 1904	36	<i>Crowns.</i> 1,030	Right foot.....	Contusion.....	Both ankle bones callously thickened and sensitive to pressure, ankle joint nearly immovable, moderate edema on foot and shank.
76	{Boilermaker in machine factory with boiler shop.	{Apr. 23, 1907	42	921	.....do.....	.....do.....	{Swelling over the scaphoid bone, sensitive to pressure.
77	Carpenter, building enterprise.	Nov. 14, 1912	48	956	Left foot.....	Contusion and laceration.	Thickening of first metatarsophalangeal joint, great red scar above it.
78	Carpenter, building enterprise.	Aug. 10, 1911	56	1,020	Right leg.....	Fracture.....	Deformity and stiffening of the ankle joint.
79	{Day laborer, building industry.	{Apr. 14, 1904	37	487	.....do.....	{Fracture of tibia.	{Fracture healed with inward curvature; swelling and painfulness of the foot and shank consequent to pressure of callus. Flat foot.
80	{Day laborer, lumber yard.	{June 2, 1905	31	360	.....do.....	{Fracture of tibia and fibula.	{Shortening of the leg by 3 centimeters.
81	{Hostler, heavy teaming establishment.	{June 18, 1907	26	564	.....do.....	{Complicated fracture of shank.	{Deformed callus, adherent scar, thickened and stiff ankle joint, lessened musculature.
82	{Engine tender (by trade machinist), electric power works.	{May 16, 1905	32	1,221	{Right leg and head.	{Complicated fracture of shank, laceration and contusion of temple, concussion of brain.	{Shortening of the leg by 2 centimeters, thickened and stiff knee joint, extensive scars on knee and shank, atrophy of muscles.
83	{Bricklayer, building industry.	{July 6, 1904	35	702	Right leg.....	{Fracture of thigh.	{Shortening of the leg by 4 centimeters, thickening of the ankle, bending and turning motions in hip limited.
84	{Boilermaker, metal ware and machine factory.	{Aug. 9, 1901	28	828	.....do.....	{Distortion of hip joint, swelling of and extravasations of blood on, thigh.	{Shortening of the leg by 5 centimeters, sensitiveness of the greater trochanter to pressure, stiffness and painfulness of hip joint.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In- sur- ance insti- tute.	Court of arbi- tra- tion.		
2	60	8	.....	Same occupation in another establishment.	<i>Crowns.</i> (1)	16½	.....	.....	75
10	75	(a) b 1 c 2 d 4	3 9 9 9	{ Same as before accident. do	{ 806 1,171 1,092 1,391 Over 1,000	{ 50 33½ 20 20 0	{ 0	{ 0	76
6	10	.....	5						77
12	33½	2	.....	do	1,449	10	.....	Hernia and marasmus not caused by the accident.	78
6	66½	(a) b 1 c 4	6 4 4	{ Dike guard with same employer.	563-599	{ 33½ 25 25	{ 50 50	{	79
3	50	a 3 b 7	..... .....	{ Day laborer in various establishments.	420-780	{ 33½ 15	{	{	80
5	66½	a 1 b 2 c 3 d 5	..... ..... ..... .....	{ Same as before accident. Mail wagon driver	{ 600 600 624 660	{ 33½ 20 15 10	{	{	81
3	{ 75 c. a. 83½	(a) b 1 c 2 d 2 e 4	6 6 6 6	{ Unemployed Auxiliary fireman in a flour mill. Machinist in a steam sawmill.	{ 624 1,080	{ 75 100 83½ 50 33½	{	{	82
4	50	a 4 b 8	..... .....	{ Stamper in car works. Inebriate; no permanent employment.	{ 878 (?)	{ 33½ 33½	{ 50	{	83
11	75	(a) b 3 c 5	9 9 9	{ Ostensibly day laborer. Boiler maker in another establishment.	{ 520 954 983	{ 50 40 25	{	{	84

¹Unchanged.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
85	Laborer, brewery.	Apr. 18, 1912	42	<i>Crowns.</i> 960	Left leg.....	Fracture of shank.	Thick callus on tibia, ankle joint nearly stiff, walking made difficult.
86	{Helper, iron industry.	}Nov. 22, 1905	16	1 528	.....do.....	{Laceration and contusion.	{Swelling of knee and stiffness in extended position, lessening of musculature of the leg.
87	{Stone breaker, gravel pit.	}Apr. 25, 1904	54	355	.....do.....	{Fracture of the femur.	{Shortening of leg by 3 centimeters in outward rotation; active and passive bending in hip joint up to 130°, rotation suspended; trochanter size of child's head, walking only possible with aid of stick.
88	Fireman, carved wood manufacture.	Oct. 10, 1901	34	1,664	Both legs.....	Burns on shanks.	Scars on shanks and ankle joints, partially still sore; ankle joints slightly disabled.
89	Bricklayer, building industry.	Apr. 26, 1907	42	807	.....do.....	Spraining of right foot, fracture of left shank close to the knee.	Chronic dislocation of the right ankle joint; thickening and stiffness of left knee.
90	Glass melter, glass factory.	Sept. 22, 1905	41	1,121	Right eye.....	Inflammation of cornea and iris consequent to the entering of hot ashes into the eye.	Opacity of the lens; after its operative removal $V = \frac{5}{60} + D$.
91	Machinist, metal goods factory.	Aug. 7, 1899	25	1,320	.....do.....	Injured through entrance of foreign matter.	Reduced visual capacity of the injured eye as to sensation of light.
92	{Painter, building industry.	}May 14, 1908	36	1,339	Left eye.....	{Burned by lime.	{Visual capacity of injured eye lessened to 5/18.
93	Laborer, granite quarry.	May 23, 1908	47	618	.....do.....	Injured by stone splinter.	Blindness of injured eye.
94	{Chain maker, nail and chain factory.	}Jan. 24, 1908	18	323	{Left collar bone.	{Dislocation of connection with the breast bone.	{Chronic dislocation of the collar bone, weakness of arm.
95	Hostler, livery stable.	May 21, 1900	23	1,028	Back.....	Contusion; fracture of spinal vertebra.	Protrusion of the spinal process of the injured lumbar stooping seriously impeded; wears a support.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Continued.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.	
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—				
		Years.	Months.			In-surance institute.	Court of arbitration.			
7	50	1	7	Same as before accident.	Crowns. (1)	0	.....		85
8	83½	(a) 1	6	Unemployed.....	.....	75	.....	} Lowest earnings of paid workers. }	86
		(b) 3	6	{ Warehouse laborer in same establishment.	{ 458	50	.....		
		(c) 5	6			834	40		
4	100	(a) 2	6	{ Stonebreaker in same establishment.	{ 225	66½	.....	} .....	87
		(b) 4	10			330	50		
2	75	11	10	Foreman in same establishment.	2,100	0	.....		88
4	60	5	.....	In business for himself.	(?)	25	.....		89
2	25	4	6	Doorkeeper in same establishment.	1,076	15	.....		90
2	33½	13	1	Machinist in another establishment.	2,400	0	.....		91
3	{ 10 c. a. 15 }	4	.....	{ Painter in another establishment.	{ 1,800	5	.....		92
8	100	3	8	Agricultural day laborer.	480	75	.....	Visual capacity of right eye greatly lessened consequent to former choroiditis.	93
2	25	(a) ..	6	{ Spinner in flax-spinning mill. Agricultural day laborer.	{ 540	16½		}	94
		(b) 4	6			605	10			
1	83½	12	10	Cab driver in another establishment.	1,456	33½	.....		95

¹ Unchanged.

REVISION OF COMPENSATION IN 96 CASES SHOWING ADAPTATION TO

Line No.	Occupation and establishment in which employed at time of accident.	Date of accident.	Age at time of accident.	Annual earnings.	Part of body injured.	Nature of injury.	Consequences of injury.
96	Bricklayer, building industry.	Mar. 27, 1899	22	Crowns. 1,067	Breast and left hip.	Contusion.....	Left ribs alongside the breast bone very convexly prominent and thickened; left arm can not be lifted to a horizontal position; severe tremor of head and hands; pulse 120; knee reflexes increased; stooping impeded.

THE CONSEQUENCES OF ACCIDENTAL INJURIES—AUSTRIA—Concluded.

First determination of compensation.		Revision of compensation.						Remarks.	Line No.
Number of months elapsed since accident.	Degree of disability determined in per cent of total disability.	Period elapsed since first determination.		Occupation and establishment in which employed at time of revision.	Annual earnings.	Degree of disability determined in per cent by—			
		Years.	Months.			In-surance institute.	Court of arbitration.		
2	50	13	6	Bricklayer in another establishment.	Crowns. 960	0	.....	.....	96

REVISION OF INDUSTRIAL ACCIDENT AND SICKNESS INSURANCE LAWS OF NORWAY.

The new sickness insurance law of Norway, which is a codification of the law of 1909 and amendments of 1911, together with additional provisions, became effective, with certain exceptions, on January 3, 1916. It provides both compulsory and voluntary health insurance. Its compulsory features embrace all employed wage earners in public and private service who are 15 years of age or over, but exempts those whose annual earnings exceed 1,600 crowns (\$428.80) if living in rural districts, and 1,800 crowns (\$482.40) if living in urban districts. Formerly these amounts were 1,200 crowns (\$321.60) and 1,400 crowns (\$375.20) respectively. The law also excludes seamen, who are provided for by a separate law; aliens covered by the laws of their own country; those in receipt of poor relief; those whose employment is in the nature of charitable or relief work; and those in the employment of a foreign Government. In order to receive benefit under the law employment must extend over a period of at least six days, which, however, need not be consecutive. A sick fund may exclude from membership a person suffering with a chronic disease. The term "wage earner" includes peasant farmers, household or domestic servants, and apprentices. It is especially provided that the royal institution of insurance, which administers both the sickness insurance and the accident compensation law of the Kingdom, may increase the limit of income classes provided, and that the Crown may decree that entire classes of workmen in certain regions or in the whole Kingdom shall be assigned to a particular income class regardless of their individual incomes.

Any person 15 years of age and over and not included in the compulsory insurance, no matter how small his income, may take out voluntary health insurance, provided the earnings of himself and wife do not exceed 1,600 crowns (\$428.80) if living in a rural district, or 1,800 crowns (\$482.40) if living in an urban district (formerly 800 crowns (\$214.40) and 1,000 crowns (\$268) respectively); that he present a medical certificate establishing the good health of himself and his dependents; that he receive no aid on account of sickness occurring before he has been a member for at least 4 weeks (formerly 12 weeks); and that he does not exceed 50 years of age (40 years under the former law).

To facilitate assessment of contributions and payment of benefits, persons insured voluntarily or compulsorily are assigned by the royal institutions of insurance to certain income classes, as follows:

INCOME CLASSES OF MEMBERS OF LOCAL SICKNESS SOCIETIES.

Class.	Annual income.
1.....	300 crowns and under (\$80.40).
2.....	Over 300 to 600 crowns (\$80.40-\$160.80).
3.....	Over 600 to 900 crowns (\$160.80-\$241.20).
4.....	Over 900 to 1,200 crowns (\$241.20-\$321.60).
5.....	Over 1,200 crowns (\$321.60).

The benefits under the system are as follows: To a member himself (1) free medical attendance and necessary surgical supplies; (2) in case of sickness due to injuries coming under the accident-insurance law, free medicine; (3) in case of invalidity, pecuniary aid equal to 60 per cent of the average daily wages according to his income class, as follows:

PROPORTION OF BENEFITS PAID TO BENEFICIARIES IN EACH INCOME CLASS.

Class.	Benefits.
1.....	0.60 crowns (\$0.161).
2.....	0.90 crowns (\$0.241).
3.....	1.50 crowns (\$0.402).
4.....	2.10 crowns (\$0.563).
5.....	2.70 crowns (\$0.724).

But the pecuniary aid, together with any payment received for work during sickness, or with any pecuniary aid he may receive from private sickness insurance, shall not exceed 90 per cent of his actual income at the beginning of his sickness. (4) In case of confinement pecuniary aid for 8 weeks (2 weeks preceding confinement); a maternity relief is provided of at least 1 crown (26.8 cents) per day, conditioned on said member having been a member of a sick fund for at least 10 consecutive months immediately preceding. (5) Funeral aid of not to exceed 50 crowns (\$13.40). A woman in confinement also receives free nursing care in addition to the maternity cash benefits. The wife of a member insured in the sick fund receives free services of a midwife and 30 crowns (\$8.04) cash maternity benefits. For cash benefits care in an institution may be substituted, in which case 50 per cent only of the pecuniary benefits are paid to dependents in the home.

To meet its expenses a local sick fund may require the payment of premiums according to the scale in force for the fund at the time; for funds having no regular tariff of premiums the Government department provides such. It is presumed that tariffs are made to cover the expenses of the funds. Premiums are paid as follows: In the case of a compulsorily insured member, six-tenths by the member, one-tenth by his employer, one-tenth by the municipality, and two-tenths by the State; in the case of voluntarily insured members,

seven-tenths by the member, one-tenth by the municipality, and two-tenths by the State. These rates are the same as in the law of 1909. The employer pays the premium by making a deduction from the wages of his employee.

The central administrative body of the sickness insurance system is the Royal Institution of Insurance, which supervises local funds, one of which must be established in each municipality or town. The expenses of the institution are borne by the State. Beside the public funds established as indicated, trade funds and private funds may also be established as carriers of the insurance. All these are subject to the close inspection of the central administrative authority. To gain recognition a society must have at least 200 members, while public funds may be organized with 100 members. In general, the administrative provisions of the law are identical with those of the law of 1909. (See Twenty-fourth Annual Report of the Commissioner of Labor, 1909: Workmen's Insurance and Compensation Systems in Europe, vol. 2, pp. 2064-2073.)

A recent number of the Journal of the Norwegian Labor Office calls attention to the fact that according to the law of July 26, 1912, governing the practice of physicians in the Kingdom, the local physicians are required to give medical aid to the inhabitants of their district at the ordinary rate of compensation. They are also required to serve as physicians for the district sick fund under such agreement as may be drafted by the labor department. In order to prevent excessive fees under the sickness insurance law the Royal Institution of Insurance is given power, upon the proposal of a local sick fund and with the consent of the labor department, to substitute cash benefits for free medical help or for the services of a midwife.

In order to prevent a recognized fund from taking in only the safer risks at the expense of the local fund the law in question provides that the former shall include all wage earners at the establishment in question who are subject to the compulsory insurance, and that the members of recognized trade funds subject to compulsory insurance shall remain members of such fund as long as they belong to the trade for which the fund is created.

The new industrial accident insurance law which became effective on January 1, 1916, involves changes in the former law as follows:

The number of industries covered is increased by adding express and hauling, provided at least two horses are used or the business is conducted in connection with other industries covered by the law; work on lighters or scows of 50 or more tons register; electric heating and power plants; agricultural operations in which mechanical power is used.

Nonresident foreign dependents are excluded from participation in pensions allowed in case of death of an injured person.

Medical and hospital treatment are provided from time of injury, payment for the first 10 days being from the sickness-insurance fund and after that time from the accident-insurance fund. If the injured person is not a member of the sickness-insurance fund, such treatment must be at the cost of the employer from the first day of injury.

If an injured person is forced to remain in a hospital, dependents are granted an allowance during such time, the amount varying according to the number of dependents, of from 20 to 50 per cent of the injured person's earnings.

WORKMEN'S COMPENSATION LAW IN JAPAN.

By a decree issued August 2, 1916, in accordance with the provisions of the factory act of March 28, 1911, Japan has introduced a system of compensation for injuries to certain classes of workers. The decree applies to factory workers only. A minimum compensation is provided for in case of injury, sickness, or death sustained while at work.

In all cases of injury medical services and supplies are furnished at the cost of the employer, and a compensation equal to one-half daily wages for the first three months of disability and to one-third after that period. After three years of medical attendance, the employer may relieve himself of further obligations by paying the injured operative a sum equal to "more than 170 days' wages." If after recovery the operative is not fully restored to his previous physical condition or is not able to resume his former occupation, or in case the operative is a woman and her appearance is marred, a further payment equaling from 30 to 170 days' wages is required.

The compensation payable in case of death consists of medical services and supplies, a funeral benefit of 10 yen (\$4.98), and a compensation equal to more than 170 days' wages, payable to dependents or others living in the same family with the operative. Amounts of compensation received under proceeding under the civil code may be deducted from the compensation provided.

The governor of the prefecture is authorized to mediate all disputes.

LEGAL REGULATION OF WELFARE WORK IN GREAT BRITAIN.

In the early part of the present year the British ministry of munitions established a welfare department, charged with the general responsibility of securing a higher standard of conditions for all

woman and girl workers in munition factories through welfare supervision, and Mr. B. Seeborn Rowntree, a manufacturer well known for his social studies, "Poverty," "Land and Labor," and "Unemployment," was appointed director. More recently, by the police, factories, etc. (miscellaneous provisions) act, 1916, bearing date of August 3, 1916, important powers were conferred upon the home secretary to secure the welfare of workers in factories and workshops by the issue of orders regulating such matters as arrangements for preparing or heating and taking meals, supply of drinking water and protective clothing, ambulance and first-aid provision, supply and use of seats in workrooms, facilities for washing, accommodation for clothing, and supervision of workers. A notable provision of the law is the requirement that no contribution shall be exacted from the workers, "except for the purpose of providing additional benefits which, in the opinion of the secretary of state, could not reasonably be required to be provided by the employer alone, and unless two-thirds at least of the workers affected * * * assent."

The abolition of the certifying surgeons' investigations of accidents is in accordance with the recommendations of the British departmental committee on accidents made in 1911. That part of the law relating to welfare work and to investigations of accidents follows:

PART II.—FACTORIES AND WORKSHOPS.

7. *Provisions for securing welfare of workers in factories and workshops.*—

(1) Where it appears to the secretary of state that the conditions and circumstances of employment or the nature of the processes carried on in any factory or workshop are such as to require special provision to be made at the factory or workshop for securing the welfare of the workers or any class of workers employed therein in relation to the matters to which this section applies, he may by order require the occupier to make such reasonable provision therefor as may be specified in the order, and if the occupier fails to comply with the requirements of the order or any of them, the factory or workshop shall be deemed not to be kept in conformity with the factory and workshop act, 1901.

(2) The following shall be the matters to which this section applies:

Arrangements for preparing or heating and taking meals; the supply of drinking water; the supply of protective clothing; ambulance and first-aid arrangements; the supply and use of seats in workrooms; facilities for washing; accommodation for clothing; arrangements for supervision of workers.

(3) Orders may—

(a) Be made for a particular factory or workshop, or for factories or workshops of any class or group or description.

(b) Be made contingent in respect to particular requirements upon application being made by a specified number or proportion of the workers concerned, and may prescribe the manner in which the views of the workers are to be ascertained.

(c) Provide for the workers concerned being associated in the management of the arrangements, accommodation or other facilities for which provision is made, in any case where a portion of the cost is contributed by the workers;

but no contribution shall be required from the workers in any factory or workshop, except for the purpose of providing additional or special benefits which, in the opinion of the secretary of state, could not reasonably be required to be provided by the employer alone, and unless two-thirds, at least, of the workers affected in that factory or workshop, on their views being ascertained in the prescribed manner, assent.

(4) If, in the case of any order proposed to be made for a particular factory or workshop, the occupier, or, in the case of an order for factories or workshops of a particular class or group or description, the majority of the occupiers of factories or workshops of that class or group or description, dispute the reasonableness of the requirements in the proposed order or any of them, the objection shall be referred for settlement to a referee selected in accordance with rules made under this section, but the secretary of state may so refer any objection though not made by a majority of the occupiers if he thinks desirable.

(5) Save as otherwise expressly provided in the order, the occupier of a factory or workshop shall not make any deduction from the sum contracted to be paid by him to any workman or receive any payment from any workman in respect of any provision made in pursuance of an order under this section, and, if he makes any such deduction or receives any such payment, he shall be guilty of an offense against the truck act, 1831, and shall be liable to the penalties imposed by section 9 of that act as if the offense were an offense mentioned in that section.

(6) The secretary of state may make rules as to the time within which, and the manner in which, notice of objection to any order may be made, and as to the selection of, and the procedure before, a referee and the cost of the proceedings before a referee (including the remuneration of the referee).

(7) Any order made under this section may be revoked at any time in whole or in part by the secretary of state, without prejudice to the making of a further order.

(8) This section shall not apply to domestic factories or workshops.

(9) The secretary of state may by a special order made in accordance with the provisions of section 126 of the factory and workshop act, 1901, extend the matters to which this section applies to matters other than those mentioned in this section.

8. *Abolition of investigations of accidents by certifying surgeons.*—(1) After the expiration of one month from the passing of this act it shall cease to be the duty of certifying surgeons to investigate the nature and cause of death or injury caused by accidents in factories and workshops or in premises to which the provisions of the factory and workshop acts, 1901 to 1911, relating to accidents, are applied, or to send to the inspector of the district reports thereof:

Provided, That nothing in this section shall affect subsection (3) of section 73 of the factory and workshop act, 1901, relating to the investigation by certifying surgeons of diseases occurring in factories and workshops:

Provided also, That it shall continue to be the duty of the certifying surgeon to investigate and report upon cases of injury caused by exposure to gas, fumes, or other noxious substances or due to any other special cause specified in instructions of the secretary of state as requiring investigation, and the secretary of state shall issue instructions defining the causes of injury to which this provision is to apply and requiring the inspector of the district to refer to the certifying surgeon all such cases reported to him. It shall also be the duty of the certifying surgeon to investigate and report upon any case of injury which the inspector of the district in pursuance of any general or special

instructions of the secretary of state may refer to him for that purpose. The certifying surgeon shall have, for the purpose of the investigation in any such case, the same powers and shall be entitled to receive the same fee as he would if the case had been a case to which section 73 applies.

(2) As from the same date the enactments mentioned in the schedule to this act shall be repealed to the extent mentioned in the schedule to this act.

9. *Construction of Part II.*—This part of this act shall be construed as one with the factory and workshop acts, 1901 to 1911. * * *

13. *Short title.*—This act may be cited as the police, factories, etc. (miscellaneous provisions) act, 1916. [Aug. 3, 1916.]

VALUE OF WELFARE SUPERVISION TO THE EMPLOYER.¹

BY B. SEEBOHM ROWNTREE, DIRECTOR OF WELFARE DEPARTMENT, BRITISH MINISTRY OF MUNITIONS.

The editor asked me to write a few notes, based on personal experience during 20 years, on the value to the employer of what has come to be known as "Welfare supervision."

Some employers tell you they do not know what this phrase means. This is only because it is a new name for something which has been carried on to a greater or lesser extent ever since there were factories. Welfare supervision is simply the creation in a factory of those conditions which enable each individual worker to be and do his or her best.

So long as factories were very small there was no need of any special organization to secure this end; the master knew each of his men personally, and if he was wise he saw that each was put to the work best fitted for him and worked under conditions which enabled him to do his utmost both for his employer and himself. But as factories grew larger and larger this personal relation was crowded out. The employer no longer knew his workers even by name. They came to be impersonal "factory hands" to him, who were treated in the mass, without individual consideration. Even when he honestly desired to do well by them it was increasingly difficult for any worker who had some personal grievance to get it remedied, and too little care was taken to suit the work to the worker and surround him with conditions tending to the utmost efficiency.

Gradually it became clear that this state of things was unsatisfactory from every point of view, and many employers appointed special officers simply to reestablish the personal relation between themselves and the workers, which still exists in many small factories. The special officers undertaking this work bear different names in

¹ Reprinted from an article entitled "Making a success of the woman worker," in *System* (London Edition) for June, 1916, through the courtesy of the publishers, A. W. Shaw Co., Chicago, Ill.

different factories; but perhaps the most usual title is that of "welfare supervisor," which was adopted by the health munition workers' committee when writing on the subject in relation to munition factories. Both men and women welfare supervisors have been appointed, though the latter greatly outnumber the former, and it is of welfare supervision among women that the editor has more especially asked me to write.

It is a subject which has been brought into some prominence through the recent action of the minister of munitions in determining that welfare supervisors shall be appointed in every national munition factory where women or young persons are employed.

Some employers may think that welfare supervision is merely a fad. This, however, is quite a mistaken view. It is not only good from the worker's standpoint, but it is thoroughly sound business from the standpoint of the employer. As a matter of fact, it is stupid to treat workers in the mass, and only through lack of insight do we fail to realize its stupidity.

For it must be remembered that a manufacturer's equipment is of two kinds—human and mechanical. What should we think of an employer who treated his machinery in the mass? As a matter of fact he watches his mechanical equipment with extraordinary care. It is continually tested to find if there is any overstrain. A man goes round with an oil can all day long to see that there is no unnecessary friction anywhere. Periodical inspections of the plant are made. And finally you have the engineer doing nothing else but seeing after the welfare of the machines. It is recognized, in a word, that each machine must be dealt with separately.

Now human beings are infinitely more complex and more delicate than machines. Notwithstanding this "hands" are taken on with but scant consideration of the particular work for which they are best suited, and little effort is made to interest them in what they are going to do, or to create in them a desire to succeed. A sensitive girl may be engaged by a rough-tempered foreman, and put to work without a word of encouragement in a great room full of strangers under the supervision of a nagging overlooker. Although she may never have been in a factory before she is expected from the first day to work a 12-hour shift, sometimes in a very bad atmosphere, and often but scanty provision is made to enable her to get a good meal in the middle of the day, amid comfortable and restful surroundings. Need we wonder at it if her work is inefficient? A girl will never do the best for her employer or for herself under such conditions.

If only employers would treat their employees with as much consideration as they do their machines they would have less difficulty in getting satisfactory output.

[775]

The editor has put to me some specific questions as to everyday difficulties. I will seek to answer them seriatim, along the lines I have indicated.

First of all, how long can women work efficiently?

It is impossible to lay down any hard and fast rule as to the number of hours girls can work with advantage. It depends upon the severity of the labor, the conditions under which the workers live at home, the transit facilities, the atmospheric conditions in the factory, and the wages paid. But, broadly speaking, I think that the demand of the workers for a 48-hour week is based upon reason. The advantage of going below it is doubtful, and I am pretty sure that, as a rule, there is little, if any, use in going much above it, except for short periods. Generally speaking, then, I should say the employer is wise who works his women and girls for 8½ hours per day from Monday to Friday, and for 5 hours on Saturday. I question whether it ever pays to keep on working girls for more than 54 hours a week. As for the 60-hour week, it is most unsatisfactory.

A short break of, say, 10 minutes in the middle of the morning is a distinct advantage. There is much evidence to show how great a relief it is to the workers, many of whom come away from home with no breakfast, or an inadequate one, and are thus enabled to get a little lunch. In some munition factories milk is being sold to the workers during this break, which is an excellent plan. In many they are allowed to go to the canteen for tea or other refreshments.

I am asked whether it is desirable for women to work at night. Certainly not; but if for any reason—as, for instance, the exigencies of war time—it is absolutely necessary, then it is far better to work women on 3 shifts of 8 hours than to work two shifts of 12 hours.

Next comes the question of canteens. Are they worth while? The Americans recognize much more fully than we do the advantages of good canteen arrangements in the works. We have all heard that “a man can be neither a statesman, a philosopher, a poet, or a lover unless he has had something to eat during the last 48 hours.” This is doubtless true, but it is just as true that unless girls in a factory can get a comfortable midday meal they can not be expected to do a good afternoon’s work. I have heard many employers speak of comfortable mess rooms as luxuries and fads, and of a good canteen as involving a capital expenditure which brings in no return.

Nothing is further from the truth. Employers know perfectly well that if they themselves lunch hurriedly on badly cooked and unnutritious food their work suffers, and what is true of them is true of their workers. If we want them to do a good afternoon’s work we should give them a restful dinner hour and see that nutritious food is available. There is some truth in a remark I once heard that “left to

[776]

herself a woman always tends to live upon cake," and this is a danger which should be guarded against in the canteens.

Another of the general conditions which a wise employer will carry out in his factory is to see that the ventilation of his workrooms is good, that they are adequately warmed, that the air is fresh, and that they are well lighted. We are quite alive to the importance of these things in our own offices. When the air is stuffy we find that our brains are sluggish, and we open the window. If we are too cold or too hot, and if the sun is shining in our eyes, or the artificial lights are too strong or too weak, we remedy the defect, because it interferes with our work.

Yet we wander through our workrooms, seeing such defects multiplied indefinitely, and wholly fail to realize that the workers are just as sensitive as we are, and that it is extremely bad business to handicap them by irritating conditions. Indeed, we grumble at the home office inspectors and call them faddists because they insist upon a certain minimum in the way of ventilation and lighting.

Turning from general conditions, which a wise welfare supervisor will constantly be watching, I should like to say a few words with regard to the more personal side of her work. Employers hardly recognize the importance of a girl's first introduction to our factories. It may make all the difference if, instead of being hurriedly engaged by a foreman, her first interview is with the welfare supervisor. The latter, after ascertaining her qualifications and deciding to employ her, can have a talk with her about her future and try to interest her in it, making her feel both that the firm intends to do "the square thing" by her, and that she must do "the square thing" by the firm. After this, for a time at least, the welfare supervisor should keep closely in touch with the newcomer, visiting her at the end of a day or two to see how she is getting on, and inquiring whether she has any difficulty that can be removed, and after this paying her periodical visits so long as may be necessary.

Great care must, of course, be taken in the selection of the supervisor. She should have a real love for girls, and be methodical and of businesslike habits, and she should in the best sense of the word be a lady. The term is no doubt ambiguous, but it does connote certain qualities of tact, gentleness, and honor, and a dignity seldom asserted and seldom challenged.

For it will be her business to keep in touch with all the girls under her charge. They should feel that she is their friend. One of the great difficulties in even the best organized establishments is to secure perfect justice in the treatment of every worker. Although the general rules may be perfectly fair and reasonable, there must always be a few exceptional cases in which a worker may have a real griev-

ance. Yet it may be impossible for her to put the point to her overlooker. On the other hand, she will not be afraid to explain her particular grievance to a sympathetic welfare supervisor. By this means the management may frequently gain information as to these petty tyrannies and the like which occasionally lower the efficiency of a workroom in apparently mysterious fashion.

There is a rule, I believe, at a certain factory in America that no worker may start in the morning if she has any grievance or cause of irritation against the management. The employee who suffers under a sense of injury will never be able to do herself justice, argue the management. Consequently any such grievances are cleared up first thing in the morning, before the operative starts work.

There are a number of causes which may adversely affect the efficiency of women workers which a welfare supervisor can remove. For instance, a girl may be worried by ill health at home. This worry will prevent her from attaining her normal output. But a chat with the welfare supervisor will often lead to some means being found for relieving the strain upon the girl's mind. This may take the form of a suggestion from the supervisor that the firm might make a small advance to meet the abnormal expenses of the household if the case proves to be genuine. On the other hand, the mere fact that someone at the works has sympathized with the girl about her home trouble will make her feel herself to be a member of the factory family.

It would be difficult to enumerate all the direct and indirect influences which such a worker exercises over a factory. But one thing is certain. Her work not only increases the efficiency of the girls under her charge, but it tends to attract a better type of worker. Many employers can show how they have been able to obtain girls with better education and from better homes through the work of welfare supervisors at the factory. Now rough, unskilled labor is seldom cheap in the long run. And everything that tends to increase the personal responsibility and the efficiency of employees will help to give him a higher rate of output.

A good illustration of the advantage of treating employees individually instead of in the mass is in the means adopted to reduce the amount of broken time—and this is work in which a welfare supervisor may be of great assistance.

The following effective way of keeping a grip on the time broken by individuals has been adopted in a large factory, with excellent results. An attendance chart was arranged on which is entered each day every absentee. In the first column the worker's number is written, in the second her name, and against each name a square is allowed for each day of the week. If a girl is away in the morning

without any reason being given, the fact is recorded by a heavy full stop in the extreme top left-hand corner of the square allocated to that day. If she is away in the afternoon a similar dot is placed in the bottom right-hand corner. Should the reason for her absence prove to be unavoidable—e. g., ill health—the dot is transformed into a cross, which represents an unavoidable absence, as distinct from unjustifiable time breaking.

Now, by looking at a chart of this sort, which extends on each page for three months, it is possible to see at a glance—

- (a) Which girls are keeping bad time.
- (b) What departments are keeping bad time.
- (c) Whether time is frequently broken on any particular day, e. g., Saturday or Monday.

In the case of girls this chart should either be prepared in the welfare supervisor's office—the necessary facts being supplied daily by the time office—or if prepared elsewhere should be sent to the welfare supervisor at least once a week. It then becomes her business to take up the matter with any employee who is keeping bad time, and to find out what the real cause is and seek to remedy it.

The cause for keeping bad time usually falls under one of the following headings:

- (a) A specific illness, such as scarlet fever, which may keep a girl away for several weeks.
- (b) Occasional illness, which may show that the girl's general state of health is poor.
- (c) Slackness, which may be caused by either dislike of or distaste for the work.
- (d) Possibly demands of parents that the girl shall do housework at certain times.

It is obvious that these causes can not be remedied in any wholesale way, nor can bad time-keeping be effectively dealt with by severe disciplinary regulations. It is worth the employer's while to treat each case individually, and this can best be done by the welfare supervisor. This is much more effective than to send a clerk or a busy foreman concerned with a multitude of other matters to interview a girl who has broken time. If a tactful woman asks the girl quietly just why it is that she is breaking time she will often get an illuminating answer. If the girl is anemic or otherwise unwell she can encourage her to adopt health rules that will make her stronger. If she is merely wearied by the monotony of the work she can try and interest her in it. In any case she can get a personal approach to the girl, who knows that although the welfare supervisor is an employee of the firm she is not in the usual sense "in league" with the

management. By constant care a good welfare supervisor is able materially to reduce the amount of broken time.

In addition to the chart described above, which deals with individual workers, it is worth while to prepare weekly statistics in which the average amount of broken time is shown for each department. In these statistics two sets of figures should be given. The first, a column showing the amount of time broken *from all causes*, whether satisfactory or otherwise, and whether with permission or otherwise; the second, a column from which are eliminated all absences which have extended over a whole week. These will almost certainly be due either to illness or to absence with leave, and may safely be deducted from the time unsatisfactorily accounted for.

I do not think it is worth while to attempt to distinguish statistically between satisfactory and unsatisfactory causes of broken time where this only extends to a day or two, as illness is so frequently given as the *cause* of absence when really it is only the *excuse*.

These weekly statistics are valuable means of comparing the time-keeping in each department. Where this is bad this will probably be found to be due to one or more of these causes:

- (a) A slack foreman;
- (b) Bad working conditions;
- (c) Too much overtime;

any of which are capable of being remedied.

A point that arises in appointing a welfare supervisor is, of course, the cost of such an officer. But this expenditure should be considered not merely as an additional outlay, but as a legitimate expense for improving the efficiency of the staff. A small firm can generally secure a suitably-trained person for £2 per week. Larger firms should pay from £3 to £5 per week, if they desire a worker conversant with all the subtle difficulties that arise in handling large numbers of women.

If there are 500 girls working in a factory, and the management pays £150 a year for such a supervisor, she is costing the firm less than 1½d. per worker per week. If the average rate of wages is 12s. per week, the supervisor is costing the firm 1 per cent of the annual wages bill. If they are paying their girls an average of £1 per week she will only cost 0.6 per cent of the wages bill.

If, as a result of a more contented personnel, one does not get far more than 1½d. of extra output per week from each girl, then something is very much amiss. It is certain that such a worker is an economy in every sense of the word. She saves the manager from worrying over the thousand and one points that can be dealt with by women far better than by the best business man. Consequently she frees the executives for more important work.

[780]

It is clear that the whole success of welfare supervision will depend upon two things—firstly, the employer's recognition of its importance, and, secondly, the personality of the welfare supervisor.

After more than 20 years' experience of welfare supervision in my own factory, I am thoroughly convinced of the wisdom of appointing welfare supervisors where large numbers of girls are employed. They not only promote the well-being, the health, and efficiency of the girls, but they save the management an enormous amount of trouble. And it must be remembered that an increase of efficiency is important not only to employers, but also to the workers; for there can not be progressive improvement in wages unless there is progressive improvement in methods of production.

WELFARE WORK IN GREAT BRITAIN.

At no time in the industrial history of Great Britain has the entrance of women and girls into industry, to supplement or take the place of men, assumed such magnitude as now made necessary by the requirements of war. In the long list of occupations constituting men's work primarily, those in which female labor has not appeared may be regarded as exceptions. Unfit physically and untrained to meet the demands made upon them by the hard manual labor which, because of high wages, constitutes a new and attractive source of income, these workers are compelled to undergo the wearying physical strain aggravated by long hours, improper or inadequate sanitary conditions, and the extreme fatigue produced by industrial processes to which they are wholly unaccustomed, which must be minimized, if impossible of elimination, if health is to be conserved and the greatest efficiency achieved. Employers recognizing this fact have in many instances come to appreciate the importance of dealing with their employees individually instead of in the mass, studying their needs through thoroughly organized and equipped welfare departments, in the effort to increase their personal responsibility and efficiency, knowing from experience that such a course will help to make a higher rate of output. Encouragement to this end has been supplied by the British ministry of munitions, which, in dealing with the great problems of industrial endeavor accentuated by war conditions, has determined the value of protecting the health of workers and given to employers the benefit of its suggestions and recommendations in the hope that the nation may not ultimately suffer from the rather unusual and extraordinary demands of the present as affecting women. The ministry has decided that welfare supervisors

[781]

that legislation providing restrictive regulations for the protection

shall be appointed in every national munitions factory where women or young persons are employed, and at the head of its welfare department it has placed B. Seerbohm Rowntree, an employer, who, after 20 years' experience with welfare supervision in his own factory, announces:

I am thoroughly convinced of the wisdom of appointing welfare supervisors where large numbers of girls are employed. They not only promote the well-being and health and efficiency of our girls but they save the management an enormous amount of trouble. And it must be remembered that an increase of efficiency is important not only to employers but also to workers, for there can not be progressive improvement in wages unless there is progressive improvement in methods of production.

Connected with this welfare department of the ministry of munitions is Miss E. Dorothea Proud, a graduate of the University of Adelaide, Australia, who, in a recently published volume,¹ brings together the results of inquiry and research into the conditions of welfare work as carried on in the factories of Australia and Great Britain. Mr. David Lloyd George, minister of munitions, in his foreword says:

It may well be that when the tumult of war is a distant echo and the making of munitions a nightmare of the past, the effort now being made to soften asperities, to secure the welfare of the workers, and to build a bridge of sympathy and understanding between employers and employed will have left behind results of permanent and enduring value to the workers, to the Nation, and to mankind at large. This volume will be found very helpful to those who desire to do their part in the good work now. * * * Her [Miss Proud's] knowledge of welfare work is therefore unique, and her book bids fair to become the standard work on the subject. I warmly commend it to employers, to lady superintendents, and to all those members of the general public who care for the welfare of the workers in our factories.

The author defines welfare work as consisting of "voluntary efforts on the part of employers to improve, within the existing industrial system, the conditions of employment in their own factories," explaining that this "definition excludes attempts to change the established social order, but neither limits the notion of 'employer' nor postulates the nature of his motives nor his success. By enforcing minimum requirements legislation sets the standard adopted for lack of a better one, for factory legislation and welfare work are mutually dependent, as experiments of individuals guide the course of legislation, and legislation influences the progress of welfare work." The study is presented in two parts, followed by 13 chapters appearing as appendixes.

In Part I the author notes the social function of the employer in a capitalistic state and his influence on factory legislation, showing

¹ Welfare work. Employers' experiments for improving welfare work in factories, by E. Dorothea Proud. London, G. Bell & Sons (Ltd.), 1916. xvii, 363 pp. 7s. 6d. net.

that legislation providing restrictive regulations for the protection of workers, prompted by an awakened public opinion, has followed upon experiments by employers who have fulfilled their social function by demonstrating the practicability of improving conditions of employment.

In theory and in practice it appears that the best employers have played a fundamental part in the gradual raising of the worker's standard of living. Indeed, step by step the path of progress has been marked out by employers, through their individual efforts made from time to time throughout the nineteenth century.

These efforts of employers are traced from the time when Sir Robert Peel, an employer, in 1802, first spoke in favor of factory legislation, although it is stated that self-interest was his motive, down to 1847, when, with the passing of the 10-hour bill, "the principle of factory legislation as we understand it to-day may be said to have been effectively adopted by Parliament." Not only in public, but from within the factory, employers by their experiments found it necessary to convince the country that a trade injurious to the workers is unprofitable to the Nation and that legislation does not destroy industry. The suggestion made by practical employers with respect to the appointment of paid inspectors, adopted by the factory commission in 1833, "made factory legislation effective in the United Kingdom. In methods of administration of the acts there has been no other step comparable with this in importance," for "with the advent of the expert inspector and the issue of regular reports on factories there was made a direct channel of communication between the best employers and the legislature. * * * Their recommendations were undoubtedly received with respect, and formed the basis for further legislation." Thus the interests of employees have been advanced.

With the establishment of the principle of factory legislation, so far as the hours of labor for women, young persons, and children were concerned, it became necessary to expand its scope, and as the demand arose the law was extended, trade by trade, the subsequent details of legislation being placed in the hands of experts in the home office instead of Parliament, in recognition of the fact that regulation can only proceed where there is evidence that provisions are "reasonably practicable." Thus it is believed that conferences of inspectors with employers and operatives in trades have hastened the adoption of appropriate regulations, but that general progress depends on individual employers whose experiments are of increasing significance. The attitude of employers toward factory legislation also seems to have undergone a change. "Not only is the economy of high wages recognized, but welfare work may help to maintain indus-

trial peace if the workers can be convinced that 'philanthropy' is not the motive force. Since industrial legislation benefits the nation, the fact that welfare work pays is, in so far as it destroys the motive which makes employers demand legislation, regarded as a national danger," which is increased by the fact that "esprit de corps and self-interest cooperate to prevent progressive employers from urging the public to take steps to reduce their beneficent provisions to the level of mediocrity by means of legislation."

So far as the workers themselves are concerned, Miss Proud points out that they seem inclined to look with disfavor upon welfare work in the fear that (1) it tends to make individuals content with their lot and callous as to the lot of their fellows, thus weakening "the social instinct, which is humanity's natural safeguard"; and (2) because they suspect philanthropy—"they do not desire charity but justice." These fears, however, do not appear to the author to be valid, because, in the first place, "welfare work does not presuppose industrial peace, nor is it incompatible with trade-unionism," and, in the second place, "philanthropy is not welfare work."

Far from being a "sleeping draught" for the workers, welfare work in its best forms encourages their aspirations and stimulates in them desires for better conditions and more adequate opportunities of self-realization.

Prompted by humanitarian and commercial considerations, the welfare department has been made one of the specialized departments in many establishments where employers have been induced to study working conditions with a view to their improvement. The advantages of the welfare department seem to have been recognized both by employers and by the Government, and in the selection of welfare supervisors it is regarded as important that they be persons of tact, capacity, and suitability for the work required as well as persons prepared to recognize the individuality of each worker, for "the essence of welfare work is its individuality."

In Part II the author takes up the more practical aspects of welfare work in its relation to workers, presenting a chapter on the industrial environment, including the influence upon workpeople of proper conditions of ventilation, lighting, sanitation, provisions for rest, temperature, etc.; a chapter on wages and hours; one indicating the incidental aids to welfare, such as health, recreation, food, baths, gymnasiums, and housing; and a final chapter on the scope of the welfare department.

It is regarded as important that workers be selected with some appreciation of their fitness for the job—a matter which should receive the attention of the nation, since its wealth depends upon the workers' health. In this connection the absence of mortality statistics among women in industry is commented upon, and since "women are

habitually less thoughtful than men in matters concerning their own health" it "must needs be of paramount importance to the nation" to safeguard their health by legislation, "which is still unsatisfactory."

The ignorance and the apathy which exist with regard to the appropriateness of work for women are found in varying degree throughout the whole field of industry. The community as a whole gives no guidance as to the suitability of various kinds of work to varying temperament and ability, but leaves it to be determined by accident, or, at best, by the care of more or less far-sighted employers.

However, it is noted that modern employers in their endeavor to select efficient workers have set up certain educational, physical, and moral standards, while some are appreciating the value of selecting employees temperamentally fitted for the work. "The nation loses unless workers are placed where their labor is most effective," and to set up and enforce in behalf of employers the standards indicated is regarded as the obvious duty of a welfare department.

Without overriding departmental managers a centralized department may be useful in preventing favoritism, and it can also take into account the temperaments of those working together. * * * National recognition of the importance of psychological research is needed and a wider appreciation of the influence of employment on physical, mental, psychological, and, perhaps, moral well-being. This brings us again to the necessity for careful and complete occupational statistics.

Miss Proud comments upon the susceptibility of workers to industrial environment, which she divides into three parts: (1) Elements of which they are conscious, (2) elements of which they are not conscious, and (3) elements of which they are subconscious, and states that there is no scientifically defined minimum standard for environment in general, while the legal standards are indefinite and more or less vague in their terms. Furthermore, experts seem to differ as to what tests should be applied in determining standards, but the importance of proper ventilation, lighting, cleanliness, sanitation, provision against overcrowding, and the general appearance of the factory is being recognized by the employers, and considerable progress is noted. The author calls attention particularly to the work being done by welfare supervisors in considering the effect on workers of machines, guards, the provision and use of first-aid appliances; in improving conditions in lavatories and cloakrooms; and in controlling, in many instances, the dining arrangements with a view to making them pleasant and comfortable and perhaps combining them with a training school for the factory girls. The providing of rest rooms, both for emergency needs and to furnish a retiring place for intermittent workers, is regarded as very desirable.

[785]

In her discussion of the question of wages the author dwells upon its relation to the consciousness of the workers and states that attempts to make the existing wage system work smoothly are feared by workers lest, by accepting anything called welfare work, they seem to acknowledge that their wages are sufficient. They are more interested in the money wage and in the adjustment of rates to meet variations in the standard of living, and a knowledge of this relation appears to be essential to the welfare department. The differing effects produced upon workers as a result of payment of wages by time and by piece seem to merit the consideration of the welfare department in order that the good elements of each method may be combined and thus more nearly meet the temperamental characteristics of each worker. When advising on matters of wages welfare supervisors should consider both the workers' and the employers' interests. Experiments seem to indicate that "the most satisfactory wage is one in which a fixed minimum is guaranteed, and the maximum reward is given for that effort which is the greatest consistent with health and comfort."

In noting a tendency toward a shorter workday the author refers to the fact that at the outbreak of the war it became necessary to determine the relation of hours to output, the experiments conducted in this connection indicating that continued overtime does not proportionately increase output. The welfare department, it is suggested, might well give attention to ascertaining the effects of altering hours of labor with a view to securing industrial efficiency. In considering the advantages and disadvantages following upon shorter hours the question of strain and speeding up will need to be taken into account. Then, too, the matter of spells and breaks is important, and from experiments it seems that the five-hour spell permitted by law is coming to be regarded as excessive. Also it appears that where holidays have been granted and paid for on suitable conditions, improvements in conduct, time keeping, and workmanship have been progressive.

Having considered the more fundamental matters of welfare work—wages, hours, and workroom conditions—the author devotes a large portion of her book to a review of incidental aids to welfare which she groups under three heads according to whether they affect the physical well-being, the mental development, or the personal dignity of the employee. Under the first it is noted that there are few legal provisions for the health of factory workers, but that doctors and nurses are frequently engaged by employers with beneficial results to themselves as well as to their employees. At this point the welfare secretary is expected to guard the worker from

overstrain and, when necessary, arrange for his care in a convalescent home or hospital. Opportunities for recreation are essential.

It is gradually being recognized that the physical fitness of the worker has an important bearing on the output of the factory, and so it is found that dining rooms and restaurants are slowly becoming more general, more especially in * * * factories * * * so situated that the workers can not return home readily for their meals.

In some factories baths of various kinds are to be found—those needed because of the nature of the work performed or because of the absence of baths at home, and those provided for recreation—while other factories provide gymnasiums. On account of the war the housing of workers has presented a most urgent problem because of the gathering together of a large number of people into spaces which afford no adequate accommodation, and to deal with this problem becomes the duty of the welfare department.

When it comes to mental development of workers, it seems that in the present state of English law "the time which can be devoted to education is largely a matter of voluntary concession on the part of the employer, and therefore he is the only person who can make continued education compulsory. To spend six hours per week in a classroom can be made, and sometimes is made, a condition of employment." It is believed, however, that provision might be made by law for the combined education and employment of young persons between 14 and 19 years of age, the advantage of the factory school being "that it greatly facilitates the arrangements between schoolmaster and foremen," while the disadvantages suggested are that (1) opportunity for social intercourse is restricted, (2) the employer's influence may be excessive, and (3) the comparatively small numbers may make the expense greater, which, however, need not affect the choice of teachers. Care should be exercised in order that children may not be compelled to devote certain hours to study without some concession as to hours of employment, and the welfare department is cautioned to interest itself in studying the hours of work in relation to fatigue to see that they are such as to permit of additional demands upon the time and energy of workers. Opinion seems to differ as to the advisability of making education compulsory.

The author thinks it important that employers should consider the personal feelings of workers, extending to them more courtesy and wider sympathy and intrusting to them some measure of discipline and responsibility and authority. Some guaranty as to continuity of employment and provision for insurance of employees would seem to make for greater efficiency, but throughout all the relations between employer and employee "despotism and charity alike must give way to justice."

[787]

In all matters pertaining to factory efficiency growing out of the relation of work to worker and industrial environment, problems of importance both to employers and employees are constantly arising which demand careful consideration and wise solution. This result can best be effectuated, in the opinion of the author, through a welfare department thoroughly organized and equipped, under the personal direction of an expert welfare secretary endowed with business capacity, a knowledge of work done in the factory, sympathetic understanding of workers, and tact, who shall devote his entire time to the best interests of workers and the factory management alike. To accomplish the largest results the factory must be properly equipped for welfare work; the secretary must adjust arrangements to meet changing needs, keep records of workers, provisionally select employees, leaving the final choice to the department manager, and exercise a general supervision over wages and hours of workers, their instruction, health, recreation, and insurance.

He is in a general way responsible for discipline in the factory and for considerate treatment of workers. He must reconcile the demands of the employer with the rights and feelings of the workers. Only in so far as he gains the confidence of the workers does he become their representative.

Opportunity for exchange of ideas between welfare supervisors is deemed of value.

The welfare secretary's duties become increasingly important and increasingly difficult as they pass beyond the range of regulation and enter upon the realm of personality, where it is necessary to adapt, to the individual, arrangements made for the many. This is the service which the welfare secretary renders the community—to restore the personal element, lost in the rush of material progress—to socialize the economic relation of employer and employed.

WOMAN'S WAR WORK IN GREAT BRITAIN.

A number of official British reports have been issued since the outbreak of the war giving the results of studies and investigations of the replacement of men by women in munition factories and in the various lines of industrial pursuits. From these reports it appears that through the employment of women, who have shown a disposition to undertake practically every form of work where their services could be accepted, large numbers of men eligible for military duty have been released, and the opinion seems to prevail that the necessity of replacing wastage in the army will eventually compel the release of all men who can be replaced by women, a condition which prompts the War Office to suggest the advisability of employers training temporary substitutes as early as possible in order to avoid any falling off in production.

[788]

It appears that this increased employment of women has made steady progress since the beginning of the war—a fact indicated by the following table, based upon periodical returns made by employers to the employment department of the British Board of Trade and taken from the Board of Trade Labor Gazette for October, 1916, page, 357.

ESTIMATED NUMBER OF WOMEN EMPLOYED IN JULY, 1914, AND ESTIMATED INCREASE SINCE THAT DATE, SHOWING ALSO ESTIMATED NUMBER OF WOMEN REPORTED AS REPLACING MEN.

Item.	Estimated number of females employed in July, 1914.	Estimated increase in the number of females employed since July, 1914.		Estimated number of females reported by employers as directly replacing males.	
		April, 1916.	July, 1916.	April, 1916.	July, 1916.
1. Industrial occupations.....	2,117,000	275,000	362,000	213,000	263,000
2. Commercial occupations.....	454,000	166,000	198,000	152,000	201,000
3. Professional occupations (mainly clerks).....	67,500	13,000	15,000	12,000	15,000
4. Banking and finance (mainly clerks).....	9,500	23,000	30,000	21,000	26,000
5. Hotels, places of entertainment, etc.....	175,000	12,000	19,000	27,000	31,000
6. Agriculture (Great Britain only).....	130,000	¹ 14,000	66,000	37,000	66,000
7. Transport (other than municipal).....	15,000	23,000	31,000	24,000	31,000
8. Civil service.....	66,000	39,000	48,000	30,000	38,000
9. Arsenals, dockyards, etc.....	2,000	25,000	69,000	13,000	69,000
10. Local Government (including teachers and municipal transport workers).....	184,000	21,000	28,000	18,000	26,000
Total.....	3,219,000	583,000	866,000	547,000	766,000

¹ This is a decrease which the report says is due to the seasonal character of the occupation; the number employed is an increase if compared with April, 1916. [As given in the original, evidently April, 1914, is intended.]

² As printed in the original; the sum of these figures is 3,220,000.

These estimates, it is explained, relate to employed persons, excluding outworkers, and the women are classified according to the employers' position, e. g., a factory clerk appears under industrial occupations, and a municipal tram conductor under local government. In connection with the publication of this table it is noted that—

Since the war about 866,000 additional women and girls, or 27 per cent of the numbers employed in July, 1914, have been drawn into the various occupations included in the table above. The figures do not include domestic service, employment in small workshops and workrooms in the dressmaking trade, and in military, naval, and Red Cross and St. John's hospitals. In the case of the two former, there has been a big displacement of female labor since the war, and it is estimated that there has been a decrease of about 150,000 in the number of women and girls employed. On the other hand, the number of women employed in attending sick and wounded soldiers and sailors at any particular time is now about 27,000 greater than before the war. The net result of this is to show an increase of 738,000 in the total number of women engaged in occupations outside their own homes. It must be borne in mind, however, that a great part of the work previously done by the domestic servants who have gone into other occupations is now performed by unpaid labor.

In groups 1 and 9 a very large proportion of the increase is, of course, due to the advent of the woman munition worker. Many of these women are not, strictly speaking, replacing the men, but they are doing what was before the war generally regarded as men's work. But munition work is only a part of women's industrial activity. There are very few industries or occupations in which the number of women has not increased. There are few in which some direct substitution of female for male labor has not taken place. The chief instances of decline in numbers of women employed are domestic service and employment in small dressmaking workrooms. Other important industries which show a numerical decline are laundry work, dressmaking, confectionery, printing and bookbinding, linen, lace, and silk, but in all these groups some women are directly replacing men, and in many individual firms in these and other groups a decline in the number of women simply means that some of the women have left to go to men's work and have not been replaced.

Women are directly replacing men (only in comparatively small numbers) even in building, mining, and quarrying. They are replacing them in considerable numbers in most of the metal industries, though not on the main processes in iron and steel works. In the cotton trade no less than 25,000 females are returned as directly replacing males, though in other textile industries (except hosiery) progress has been less marked. In the food trades there have been very interesting cases of substitution. In grain milling the number of women and girls employed has risen since July, 1914, from 2,000 to 6,000; in sugar refining from 1,000 to 2,000; and in brewing from 8,000 to 18,000; the increase in these trades is almost entirely due to the direct replacement of men by women. Women are also doing men's work to an appreciable degree in tanning and leather working, sawmilling and woodworking, glass, china, earthen ware, and rubber. Very often, however, it is still found that while some firms have fully realized the possibilities of substitution, others in the same trade have hardly made a beginning with it.

The employment of women in what is mainly clerical work, groups 2, 3, 4 in the table, requires little comment; the most striking new development here is the introduction of women clerks into banks and financial houses. In agriculture the process of substitution made slow progress during the first eighteen months of the war, but an acceleration is now noticeable. Besides the regular women workers there is a large increase in the number of fruit pickers, harvesters, and other casuals.

Railway employment furnishes a particularly interesting series of experiments in female labor. Before the war the railway companies only employed about 11,000 women—clerks, cleaners, attendants, etc. Approximately 33,000 are now employed. The kind and amount of substitution carried out varies from one railway company to another. One has increased the number of its women clerks from 70 to 1,526, and employs also 18 women ticket collectors, 186 carriage cleaners, 55 engine cleaners, and 454 porters. Another, with neither women ticket collectors nor porters, has 480 women carriage cleaners, 475 engine cleaners, 226 laborers in the workshops, and 37 other women laborers. Yet another, with no women engine cleaners or laborers, has 142 ticket collectors. In other branches of transport the most interesting experiments have been made by local authorities, and the resulting figures are included in group 10. Everywhere women are largely employed in the tramway departments as cleaners and conductors, and in some districts as drivers. Glasgow led the way in the use of women tram drivers, but several other towns in Scotland and one or two in England and Wales are now employing them. Municipal employment of women also includes work in power stations, on

sewage farms, in gas works, in parks, and in road cleaning and scavenging, together with much clerical and educational work. The great increase in the number of women in the service of the Central Government (group 8) is mainly connected with clerical and postal work.

An information bureau for the collection and circulation of information as to the replacement of male by female labor has been established by the board of trade employment department at the Victoria and Albert Museum, South Kensington. From this bureau employers and others interested in the question of substitution can obtain particulars as to what is being done to extend the employment of women throughout the country.

The Home Office and the Board of Trade have also issued a series of pamphlets dealing with the possibilities of substitution in various industries. These pamphlets show the various branches of men's work which are, in the main, or under conditions which are indicated, considered suitable for women by the factory inspectors, and which women are successfully undertaking in various factories and workshops. The pamphlets also referred to the special exemptions from the provisions of the factory and workshops acts which have been sanctioned by the home office with a view to rendering possible the employment of women in this work.

The War Office has supplemented the information published by the Home Office and the Board of Trade by issuing in September, 1916, a 94-page pamphlet¹ setting forth in a series of 72 photographs the work being done by women in maintaining the industries and export trade of the United Kingdom, and containing a list of trades and processes in which women are successfully employed in temporary replacement of men, and also a list of officials whose assistance is available to recruiting officers and military representatives on questions affecting the supply of women workers to release men for the Army and the conditions of their employment. This information, it is stated, has been officially compiled for the use of recruiting officers, military representatives, and tribunals who will "find the lists and examples given in this book of service in dealing with claims put forward on grounds of indispensability, while employers of labor may find new ways of increasing their output in spite of the shortage of male labor." In the preface the women of Great Britain and the employers of labor are cautioned to remember that—

(a) No man who is eligible for military service should be retained in civil employment if his place can be temporarily filled by a woman or by a man who is ineligible for military service.

(b) No man who is ineligible for military service should be retained on work which can be performed by a woman (for the duration of the war) if the man himself can be utilized to release to the colors one who is eligible for military service and who can not be satisfactorily replaced by a woman.

In presenting the names of trades and processes it is explained that their inclusion does not necessarily imply that every man stated to be performing that process can be replaced by a woman, since

¹ Great Britain. War Office. Woman's War Work. London, September, 1916. 94 pp. 72 illustrations.

the possibility of actual replacement depends in every case upon the particular circumstances of the case, including such matters as the extent to which substitution had already been carried in the factory, the availability of suitable women for the work, or (in the case of agriculture) the nature of the land.

Among the employments in which women are said to be successfully taking the place of men are the chemical, clothing, food, textile, paper and printing, and woodworking trades, certain nonindustrial occupations, agriculture, and munitions work. In the latter are included the following chief trades: Aeroplane manufacture, ammunition manufacture, artillery manufacture, brick making, explosives manufacture, electrical trades (including telephone, telegraph, and wireless), engineering generally, instrument making (optical and scientific), leather and canvas goods manufacture, marine engineering, mechanical engineering, metal trades, rubber manufacture, shipbuilding, soap manufacture, and woodworking.

Most of the pamphlet is devoted to illustrations showing women at work at the various occupations listed, including handling of farm machinery, care of horses, harvesting, loading and stacking crops, handling coal, barrowing coke, stoking, cleaning railroad cars and locomotives, street sweeping, handling barrels and cleaning vats in breweries, making ammunition, slaughtering, driving vans, baking, tending shop, finishing pianos, making boiler lagging, working in radiator factories, modeling artificial teeth in wax, cleaning windows, driving steam rollers, acting as postmen, handling freight in railroad stations, repairing seats in cars, working in newspaper offices, handling leather in tanyards, working on motorcycles, digging clay, working in glass factories, handling steel bars, rods, and pipes in shipyards, and barrowing in flour mills.

JUVENILE EMPLOYMENT IN GREAT BRITAIN.

One of the war problems confronting the British ministry of munitions, as disclosed by memorandum No. 13 prepared by the health of munition workers committee and issued in August of this year,¹ is that presented by the employment of children, not so much in textile trades where under the factory and workshops act their employment has been regulated for many years, but more particularly in certain nontextile processes, including the manufacture of percussion caps and of cartridges, and in other occupations incident to the manufacture of war supplies. It appears from this memorandum that the committee regards it as extremely important that the

¹ Great Britain. Ministry of Munitions. Health of munition workers committee. Juvenile Employment. Memorandum No. 13. London, August, 1916. 8 pp.

nation, at a time when the war is destroying so much of its manhood, should guard the rising generation not only against immediate breakdown but also against the imposition of strains which may stunt future growth and development. Although signs of immediate breakdown are not generally apparent, the committee quotes from the annual report for 1915 of the chief inspector of factories to indicate the effect of long hours of work by day or night:

Very young girls show almost immediately * * * symptoms of lassitude, exhaustion, and impaired vitality under the influence of employment at night. A very strong similar impression was made on me by the appearance of large numbers of young boys who had been working at munitions for a long time on alternate night and day shifts.

Conditions outside the factories, it is admitted, contribute to the fatigue of juvenile workers. Thus in the report above referred to it is noted that—

Of the boys it may be said for the most part that they are "so spiritless, so dull, so dead in look, so woebegone and attacked with weariness to a dulling of their spirits" as to compel attention. These conditions are attributable in very large measure to the conditions outside the workshop, many of them going to bed very late, due to a want of proper parental control.

It has to be remembered, declares the committee, that boys and girls need sufficient reserve energy not only for the maintenance of health but for growth. "Even under normal conditions there is some danger of juvenile employment adversely affecting physique, and this danger is materially increased by the present conditions of employment."

The committee regards opportunity for recreation as highly important and refers favorably to that portion of the report of the chief inspector of factories which states that requests for Saturday afternoon work have become less common and that there seems to be a more general recognition of the advantage of the week-end rest. "Recreation is necessary not only for the physical well-being of the boys and girls but also as a healthy relief from the monotony of work."

The prevalence of night work prompted the committee to give some attention to the question of sleep, and it was found that many of the children workers were suffering curtailment of this important means of recuperation.

* * * the home conditions leave much to be desired, even where the wages earned are high. Thus an inquiry made at a large munitions center showed that out of 33 boys employed at one factory only 3 had a room to themselves, and the majority shared a bed with at least one other person. In a number of cases three persons occupied a single bed. * * * A boy aged 14 stated that his average wage was 19s. [\$4.62] weekly. He slept in the same bed with two young men, each earning about £2 [\$9.73] a week; also, in the

same room, but in another bed, two young girls slept. A boy aged 16, earning about 22s. [\$5.35] weekly, slept in a bed with another boy. In another bed in the same room a boy and a girl slept.

The exigencies of war have led the secretary of state to relax the restrictions governing the employment of boys and girls under 18 years of age, as provided in the factory and workshops act, 1901. Under that act such children may be employed 60 hours a week, and, subject to some exceptions in the case of boys, all night work and Sunday work is prohibited, as also is overtime. The memorandum notes, however, that the weekly hours have frequently been increased to 67; night work has been common; Sunday work has also been allowed.

The problem of the limitation of the hours for which boys are employed is one of special difficulty, owing both to dearth of labor available and to the extent to which they are employed to assist men; in the absence of the boys the work of the men may be hindered or altogether stopped. The demand for adult male labor both for industry and for the army is so acute that any substitution of adult for boy labor is impracticable.

An extension of weekly hours beyond 60 can only be obtained by increasing the length of the working-day or by reducing the week-end rest; and since the committee believes that the strain thus imposed would not be justified, except in rare instances, it strongly recommends that every effort should be made to restrict the employment of all boys under 16 within the limits of 60 hours, even at the cost of some inconvenience to male labor. As to the employment of girls, it is stated that at a number of factories the three-shift system has been introduced, and in works where this has not been found practicable the weekly hours have frequently been kept below 60.

The committee records a disinclination to recommend a prohibition of the extension of daily hours of labor beyond the 12 (8 on Saturdays) provided in the factory and workshops act, but suggests that such extension, if the weekly hours are limited to 60, must be made by a corresponding reduction in the hours of work on Saturday or on other days of the week, thus providing an opportunity for exercise in the open air which might not otherwise be available. Sudden emergencies in factory operation may demand an extension of the hours beyond 12, and such an extension, it is believed, will not do harm provided, (a) the maximum weekly hours already recommended are not exceeded and that (b) overtime employment is concentrated on not more than three evenings in any week, and, so far as possible, not on consecutive evenings.

Comparatively little work is performed by children on Sunday, according to the memorandum, and the committee emphasizes its argument in favor of the elimination of Sunday work, as set forth

in its memorandum No. 1, on "Sunday labor."¹ As to nightwork, the committee calls attention to serious objections to it as outlined in its memoranda on "Employment of women" and "Hours of work,"² and states that "girls under 18 and boys under 16 should only be employed at night, if other labor can not be obtained. Wherever possible it should be stopped." Working for a continuous period of as much as five hours (the maximum legal period) without a break, even though brief, to afford opportunity for rest and recovery from fatigue and the monotony of work and for refreshment, is deprecated. In addition to the ordinary holidays, boys and girls are likely to benefit greatly by occasional opportunities for a holiday of longer duration.

Welfare supervision of girls seems to have received more attention than such work among boys, but a tendency of employers to regard the health of boys with greater consideration is noted. If fatigue, sickness, or home troubles cause boys to leave work after a few days of employment, it becomes necessary to ascertain the reasons underlying discontent, and for this purpose the welfare department of the ministry of munitions has recommended the deputizing of a welfare supervisor to study the problem,³ and outlines his duties as follows:

1. To become acquainted with all boys when first employed, to be present at the medical examination by the factory surgeon, to note any matters needing attention, to arrange for the reexamination of special cases.
2. To visit cases of sickness and to investigate other causes of irregular attendance and of complaints in regard to work.
3. To receive complaints made by boys and their parents and to dispose of misunderstandings.
4. To be consulted before any boy is dismissed.
5. To watch the conditions of housing and transit and the facilities for obtaining food.
6. To supervise and promote arrangements for saving.
7. To seek facilities for recreation and to organize their use. In one case, quoted by a witness, an excellent recreation ground was provided by a firm, but was at present unused largely owing to the lack of anyone to organize its use.

It is believed important to provide means for instructing the children in the best methods of performing their work, and also in its aim and purpose, in order to stimulate interest and relieve monotony as well as make them proficient.

The necessity for adequate canteen facilities is emphasized, whereby good food may be obtained and eaten under restful conditions.

¹ For a digest of this memorandum, see MONTHLY REVIEW for May, 1916, p. 66.

² For a digest of these memoranda, see MONTHLY REVIEW for June, 1916, pp. 74-79.

³ The committee's memorandum No. 2 on "Welfare supervision" was noted in the MONTHLY REVIEW for May, 1916, p. 68.

In order that the high wages commonly earned by boys and girls under present conditions may not encourage undue indulgence, extravagance, and thriftlessness, the committee urges that means be adopted to induce the children to save a portion of their earnings, the collection of deposits being placed in the hands of the welfare supervisor or some other person who through his acquaintance with the boy and his home can advise him as to the amount which may properly be put by from one week to another.

Under existing conditions of employment and with the urgent demand for juvenile labor, special care is necessary to prevent boys and girls entering employments for which they are physically unsuited. * * * Once a boy or girl has been admitted to work, the welfare supervisor has many opportunities for guarding their health and physical fitness. The less robust should be given work within their powers. The effects of nightwork on individuals should be noted and arrangements should be made for those adversely affected to be employed only during the day. * * * The maintenance of a high standard of personal cleanliness and the provision of suitable clothing have an important influence on health, and merit the careful attention of the welfare supervisor. * * * Records, if carefully kept, should not only be of immediate value as giving evidence of the presence of an undue strain, but may prove of more permanent value as throwing light on the many difficult problems arising out of the effect of occupation upon health.

This memorandum by the health of munition workers' committee does not indicate the extent of juvenile labor either in normal times or as a result of the unusual demands for employment of children created by the war. Such information, so far as available, is included in the annual report of the chief medical officer of the board of education for 1915,¹ who states that under normal conditions about 450,000 children pass out of the elementary schools annually at or about the age of 14, and that this figure appears to have been far exceeded during 1915 and since. This report suggests that approximately 45,000 children ranging in age from 12 to 15 years in excess of the normal number permanently left school for employment during the year 1915, and that the extent of juvenile employment existing to-day is probably much greater than during the year reviewed. Moreover, this figure, it is explained, refers almost exclusively to those legally entitled to leave school and does not include the large number of children normally liable to attend school but excused for longer or shorter periods by local education authorities for agricultural and other employment, nor does it include half-timers.

More definite information as to agricultural employment appears to have been gathered, indicating that on May 31, 1916, not less than 15,000 children were excused for the purpose of whole-time employment alone. A tendency to excuse for employment children under

¹ A brief outline of this report appears in the October, 1916, issue of the Board of Trade Labor Gazette, p. 358.

12 is noted, and the report states that it is very doubtful whether children under 12 thus excused will ever return to school. That children have withdrawn from school since the outbreak of the war at an earlier age than that contemplated by the attendance laws appears evident, in the opinion of the chief medical officer. In this situation the children would seem to be exposed to conditions of strain detrimental to physical welfare, and as a means to conserve their health the following recommendations are presented as essential:

1. Careful examination of children leaving school.
2. Similar examination of those applying for labor certificates.
3. Medical supervision of children employed out of school hours.
4. Coordination of school medical work with juvenile employment committees.

This latter recommendation is believed to be important because if carried out children may be directed to occupations suitable to their mental and physical capacities. This point has been emphasized in the excerpt above quoted from the memorandum of the health of munition workers' committee.

SOME NEW STUDIES OF INDUSTRIAL FATIGUE.

One of the subjects which, since the outbreak of the war, has received careful and detailed study by the British Home Office, particularly because of its importance as a factor in the manufacture of munitions as affecting both men and women workers, is that of industrial fatigue in its psychological and physiological aspects. This matter also received the attention of the British Association for the Advancement of Science, which, in 1915 and again this year, published reports on the question of fatigue from the economic standpoint.¹

¹ The conclusions drawn from the study of fatigue as presented in the first interim report of the association are summarized on page 40 of that report, following a statement to the effect that outside of a few individual studies mentioned "scientific management has perhaps not spent enough time searching scientifically for the laws of fatigue before setting its standard intensity of work; yet if once these laws are discovered, then it is only to a really scientific management that we can look for the application of the discovery." The significance to industrial organization of the researches chronicled in the report are then sketched in the following sequence:

First. The importance of the rôle played by fatigue and other inner states of the individual worker. It is not a monopoly of mental work to be influenced in quantity and quality by the human disposition. For the efficient management and organization of factory and office account must be taken of the human element just as much as of the material and the machine.

Second. The importance of the rest pause. A break in the work would seem to shed its influence all around; it causes a bracing excitement that avoids accidents beforehand and brings on after it a new lease of working capacity. More important than the length of working day seems the length of spell—the splitting up, the breaking up of continuous periods of work.

Third. The importance of the nature of the work in modifying the onset of fatigue. In uniform repetition work causing "subjective" feelings of monotony "objective" fatigue seems far less effective than in the nerve-taxing work of attending to a loom or of labeling and soldering accurately in place.

Fourth, and finally. The importance of taking account of and studying fatigue, and of adapting accordingly the hours of labor in each kind of work.

Three reports on industrial fatigue have been issued by the Home Office. The first is entitled "Industrial fatigue and its causes," being memorandum No. 7 published by the health of munition workers committee,¹ and the others are the first and second interim reports on an investigation of industrial fatigue by physiological methods, issued respectively in August, 1915, and August, 1916, the latter report forming the basis of the present review.²

The experiments recounted in this report were made in seven factories, most of the time, however, being devoted to two factories—one employing about 2,000 males and females in the manufacture of surgical dressings for the army, all processes required to produce the various articles being carried on in the mill, and the other an engineering works employing about 600 men, besides many women, and engaged in the manufacture of war materials of various kinds. The results of these studies are presented under three sections.

Section I considers fatigue as a result of overtime and outlines its progressive development throughout the week, the concomitant diminution in the power of recovery, the development of extra fatigue as a result of overtime, the disadvantage of working consecutive overtime days, the development of fatigue during day and night shifts with arguments for their less frequent reversal, the process of ordinary recovery from fatigue, recovery during rest intervals, and recovery complicated by illness. The influence of fatigue and of overtime upon output is taken up in Section II, where special attention is directed to the existence of periods of high and low output, especially where overtime is worked, to the gradual change in the period of lowest output as fatigue develops during the week, to the fact that overtime invariably produces the lowest output and that this may be traced to fatigue, and to the fact that overtime may lead not to an increase but to a diminution of output. The influence of home conditions on the development of fatigue and upon consequent diminution of output is mentioned, and the value of rest intervals is emphasized. The lower efficiency exhibited by workers on Monday morning is noted, which seems to offer a strong argument against the practice sometimes adopted of employing Sunday labor. The practice of some workers of going to the factory in the morning without having taken food is commented upon in the third section under the title "Food and feeding." Some consideration is also given to the means by which maximum output may be obtained, while the influence of overtime upon the general health of the worker is treated in the concluding pages.

¹ See MONTHLY REVIEW for June, 1916, p. 79, for a digest of this report.

² Great Britain. Home Office. Second interim report on an investigation of industrial fatigue by physiological methods. London, 1916. 76 pp. 18 charts.

Fatigue in this report is taken to mean "a diminished efficiency of the organism occurring after labor and partly dependent upon it."¹ Its degree appears to be determined partly by the duration and character of the labor performed and partly by the variety of circumstances outside the mill, among which the home conditions of the worker are important. Individual differences, partly constitutional and partly matters of habit, are also a factor. The results of tests made to determine the effect of overtime upon fatigue are set forth in a number of charts which show invariably a decided fall in the curve during a period of overtime, the only exception seeming to be on Monday when, although overtime was worked, little if any indication of fatigue is noted. This is probably due to the fact that a rest of 42 hours had been taken. These charts also indicate the advantage to be gained by avoiding a series of consecutive overtime days and the further fact that, although overtime workers were allowed additional rest intervals, at the end of the rest period they were considerably more fatigued than they would be at the end of a normal day. This the reports explains in the following statement:

When once an individual has, through labor during ordinary hours, reached a certain degree of fatigue, and proceeds to further labor (overtime) without taking the repose necessary to dissipate the fatigue already produced, this further labor has a greater physiological effect and exhausts the organism more than would similar amount of labor performed when fatigue was absent. This is a well-known fact in physiology; it is also a matter of ordinary experience. It is of importance in the present connection because it indicates that *overtime labor is more harmful to the worker than labor performed during ordinary hours. It is therefore physiologically extravagant.*

The degree of fatigue developed during the night was found to be greater than that developed during the day. Furthermore, it is shown in the report that under ordinary conditions the labor of an overtime day may be sufficient to interfere with recovery from fatigue during the night following. The following excerpts from the report indicate the results of the study of fatigue due to overtime:

Development of fatigue and recovery are concomitant processes. The rates of the accumulation and disappearance of fatigue are determined by the relative activity of production and recovery.

During the day fatigue accumulates. During the night the accumulation is dissipated. The effect, however, of the recovery may not show itself on Monday, when coordination is disturbed owing to abstention from labor.

¹ The report gives a more detailed definition in the following statement: "Physiologically fatigue may be regarded as the expression of a condition of the neuromuscular mechanism which tends to prevent further expenditure of energy when the supply runs low. The seat of fatigue is rather on the nervous than on the muscular side. It is not a direct expression of the exhaustion of the supply of muscular energy, though probably dependent in great measure upon it. The appearance of fatigue is due to the action of a protective mechanism, similar to the safety valve or electric fuse, but, unlike these, acting when energy becomes deficient. For the purposes of this paper it may be taken as an indication of a diminished supply of energy and a lessened capacity for work."

Since production is greatest and recovery is least toward the end of period, day and week, fatigue accumulation is then at its maximum.

A lengthening of period, day or week, leads to increased fatigue accumulation. The distribution of overtime days affects the result.

Under present conditions, production of fatigue becomes progressively more rapid from day to day; recovery becomes less rapid. Thus fatigue accumulates, and "balancing," which tends to diminish fatigue by diminishing application, is introduced. Production and recovery are restored to the normal, and accumulated fatigue is dissipated, by the week-end rest.

Overtime labor, when performed by a tired worker, results in an amount of fatigue out of proportion to the length and severity of the labor. Fatigue production is increased and recovery is lessened by overtime.

An increase in the amount of overtime worked in a given period will produce an increase of fatigue out of proportion to the increased time.

Overtime periods worked on consecutive days produce more fatigue than if separated by days of ordinary length.

Overtime produces different results in different individuals according to constitution, habits, and nutrition, and also according to varying "fitness." It may lead to serious waste of time.

The effect of overtime is not confined to the days on which it is worked.

Overtime labor is physiologically and economically extravagant. It frequently fails in achieving its object.

It is natural to presume that overtime and fatigue, the cumulative effect of the latter being increased by overtime, as already shown, will exert an appreciable influence upon output, and tests made upon "winders," surgical lint packers, and boracic lint packers, and summarized in the report under review, seem to indicate a low output during periods of overtime and a more uniform output throughout the day where no overtime is worked. To illustrate, three lint packers in one week's time working 12 hours a day (6 to 8; 8.30 to 12.30; 1.30 to 5.30; and overtime, 6 to 8) showed the following average number of pounds of lint rolled per hour on each day:

EFFECTS OF OVERTIME ON OUTPUT OF LINT PACKERS.

Day.	3 periods (10 hours).	Overtime (2 hours).
Monday.....	76.5	64.0
Tuesday.....	76.8	72.3
Wednesday.....	76.5	64.0
Thursday.....	76.2	64.0
Friday.....	72.3	64.0
Saturday.....	¹ 82.2	² 76.6

¹ Two periods, 6 to 8 and 8.30 to 12.

² Overtime period, 1.30 to 4.

This indicates an average of 76.8 pounds of lint rolled per hour during the normal hours of work, while the average for the overtime was only 67.5 pounds. It is stated that the diminution of out-

put due to overtime "is often so great that the total daily output is less when overtime is worked than when it is suspended," overtime thus defeating its own object.

A rather important fact disclosed by the experiments is that the early morning period seems to bear the same relation to the labor of the day as Monday does to the labor of the week. In both cases a cessation of work produces a disinclination to recommence, to overcome which a distinct effort on the part of the worker is demanded. Thus, among 8 winders the weekly average of bobbins wound before the early morning period, 6 to 8, was suspended was 261 per hour and the weekly average for the morning period, 8.30 to 12.30, was 275 per hour; while during a week in which the early morning period was suspended the average wound per hour in the morning period, 8.30 to 12.30, was 316. "In neither case can this be said to be due to fatigue, since a rest interval has just occurred. It is rather a loss of the special coordination which resulted from the prolonged performance of a particular set of actions and which enabled the worker to carry them out more perfectly. Only when the special coordination has been regained (temporarily) will the work be performed once more with ease and celerity."

Based on the statement that output varies according to (1) the condition of the worker with regard to skill, health, freedom from fatigue, proper food, and fitness, and (2) the circumstances of the worker with regard to machinery, material, associated workers, weather, etc., the following general conclusions are drawn from the study of the influence of fatigue and overtime on output:

Where the factory day consists of four working periods output is low during two of these, viz, the early morning period and overtime.

During the middle periods of the day output is normally high, but is lowered by the working of overtime. This diminutio is often so great that the total daily output is less when overtime is worked than when it is suspended. Thus overtime defeats its own object.

The lowest output of the day is often found in the early morning period at the beginning of the week and in the period of overtime at the week's end. The change appears to be due to the accumulation of fatigue and to the wearing off of the Monday effect (described above).

The Monday effect * * * is not without a definite influence on output. It should be recognized and controlled where maximum output is desired.

In cases where the early morning hours are not worked the unsatisfactory output commonly found in this period appears to be transferred, or not to be transferred, to the succeeding period, according to the particular day of the week concerned. On Monday the suspension of the early morning hours will, as a rule, lower output in the succeeding period. On Tuesday also a lowering will be noticed. On the remaining days of the week the suspension of work during the early morning hours is followed by an improvement in the output of the morning period. The change is due to the greater influence of practice

(through restored coordination) early in the week and of rest (through lessened fatigue) later on.

A worker may occasionally show a very high output in the early morning period.

Psychical influences affect output. The output on Saturday, in spite of great fatigue, is often high owing to anticipation of the week-end rest.

Workers may be so greatly fatigued at the end of the week that an extra period of overtime is beyond their powers, and should this be insisted upon an unsatisfactory output may be expected. A similar condition may exist on Friday.

Great variations may occur in the output of individual workers at different times. The causes of such variations may be purely personal and temporary, or they may be general and affect groups of workers.

The unsatisfactory output of the early morning period is due partly to loss of coordination. It appears to depend also upon lack of rest, lack of food, and general discomfort. These things arise indirectly from excessive hours of labor.

The unsatisfactory output of the overtime period is due to fatigue.

The early morning period may be regarded as bearing a similar relation to the day as Monday bears to the week. In both cases abstinence from work has produced a disinclination for labor and an inability to carry it out effectively. This is due rather to loss of coordination than to fatigue. Examples of similar loss of coordination may be found in knitting, in typewriting, and in similar processes.

Where no overtime is worked output during the different periods of the day is more equal.

A worker employed for 10 hours per day may produce a greater output than when employed for 12 hours, the extra rest being more than sufficient to compensate for the loss of time.

A worker employed for 8 hours per day may produce a greater output than another of equal capacity working 12 hours per day.

A group of workers showed an absolute increase of over 5 per cent of output as a result of a diminution of 16½ per cent in the length of the working-day.

Another group increased their average rate of output from 262 to 276 as a result of shortening the day from 12 hours to 10, and to 316 on a further shortening of 2 hours.

A group of pieceworkers increased their earnings considerably as a result of a diminution in the length of the working-day.

The suspension of overtime affects especially the output of the morning period.

The suspension of the early morning period increases the rate of output, even after overtime has been suspended.

The time "lost" by factory workers may approach an average of 10 per cent of the working-day. The amount lost varies with the length of the working-day and appears to depend upon fatigue.

Under the conditions studied, neither rate of working nor total output attains a maximum when a 12-hour day is adopted.

Rate of working and total output are limited by fatigue rather than by other conditions.

Total daily output may be diminished by the introduction of overtime.

The insufficiency and unsuitability of food have, according to the report, an important bearing upon the efficiency of the worker. Cases

are noted in which the output of individual workers was below the average because of inadequate dietary or omission to take food before beginning work. Experiments conducted over two periods of one week each showed that when the early morning period was not suspended three winders averaged 5,006 bobbins daily during the middle-day periods—that is, 8.30 to 12.30 and 1.30 to 5.30—whereas when the winders worked during the early morning period the middle-day periods showed an average of 5,630 bobbins per day, indicating the advantage of having time in the morning to take a meal before starting work. Workers should go home to meals, if possible, it is stated, but to accommodate those who can not do this a well-organized, well-managed canteen should be provided.

The introduction of overtime with its influence upon fatigue, declares the report, is a disturbing factor in the equilibrium of the factory operation since it tends to upset the balance between income and expenditure of energy. The resulting fatigue is disproportionately great, since the additional labor must be performed at the end of an ordinary day by an individual who is already tired. The extra energy thus required finds compensation in a diminution of application to work extending throughout the entire day. As showing that application varies greatly and that much time may be lost when it is imperfect, the report states that two workers lost an average of 26.5 per cent, 14.5 per cent and 18.5 per cent of the total time in the early morning, morning, and afternoon, respectively. "Where other things are equal, output may be taken as an indication of application." To prevent, or at least minimize, this condition, "balancing" is suggested, by which is meant "the adjustment of application to the length of the working day, and the maintenance of equilibrium between the development and the expenditure of energy."

The actual time worked and the actual rate of working, it is asserted, are essential factors in the attainment of maximum output. "They are intimately related and vary in sympathy, and the total output depends upon a proper adjustment of these two factors." It is shown by experiments that the losses in nominal time (the average time during which the workers attend) and in actual time (the average time actually worked), though always present, are by no means constant in amount, and that they vary largely chiefly because of the condition of the worker with regard to fatigue. These experiments also showed that rates of working vary in the case of different workers and also in the case of individual workers at different times of the day, and as a result of changed conditions.

Of special interest in connection with output is the fact that every alteration in the length of the working day has been followed by a corresponding alteration in the rate of actual working.

* * * Under ordinary circumstances every increase in works time [the average hours of the mill] must be followed by an increase in nominal time and an increase in actual time, but successive increases in works time will lead to diminishing increases in nominal time and actual time, since small time losses will be multiplied. Ultimately a condition will be reached when increased works time no longer leads to increased actual time, but may even lead to a diminution. Moreover, every increase in actual time, and therefore (under ordinary conditions) every increase in works time and in nominal time, will lead to a diminution of actual rate, and this diminution will be especially marked as the result of the introduction of overtime. It is for this reason that the introduction of overtime frequently leads to a diminution of total output.

The influence of overtime upon the general health of the worker, apart from his condition with regard to fatigue at any particular moment, is regarded as important, since speed of working and the endurance necessary for prolonged labor must depend upon general health. As a result of tests conducted in this connection, the following conclusion is presented:

The general health of the worker, upon which his rate of working and his powers of endurance depend, so far as it can be gauged by the tests used in this investigation, appears to be prejudiced by the introduction of overtime, and, to a less extent, by work in the early morning hours. The suspension of overtime was followed in every case by an improvement in the condition of the worker. In a large proportion of cases that condition was further improved by the suspension of work in the early morning hours. Where an estimate was made of the time lost by the worker, and this was taken as an indication of his general health, the suspension of overtime was found to result in a saving of time of 4½ per cent. The subsequent suspension of the early morning period was followed by a further diminution in the time lost.

The second interim report of the British Association for the Advancement of Science,¹ covering a study of fatigue from an economic standpoint, "with the definite practical aim of influencing industrial organization," contains a section on accumulated fatigue in warfare by Dr. Gwynne Maitland, who bases his observations on a clinical study rather than an experimental examination of soldiers in Serbia. He concludes that—

The history of six years of Balkan wars proves beyond dispute that the strain of forced marching, inadequate food, insufficient rest and sleep, resulting in a temporary and functional fatigue to begin with, may ultimately, through a gradual depreciation of tissue, cause a genuine degenerative lesion.

In ascertaining the relation between fatigue and accidents the report notes the importance of determining how far the mental or bodily state of the injured man may contribute to the occurrence of an industrial accident, and refers to a list of causes of accidents presented to the departmental committee on accidents some years ago

¹ The question of fatigue from the economic standpoint. Second interim report of the committee. British Association for the Advancement of Science. Newcastle, 1916. 24 pp.

which showed only 75 out of 1,362 accidents to which fatigue was not "contributable." According to the degree to which the human element enters, accidents are classified as follows:

First would come the accidents due to the action of the material which no human capacity could have foreseen or avoided at the time; secondly, accidents which a high degree of attention might just have foreseen; thirdly, accidents which a quick reaction (i. e., presence of mind) might have escaped; fourthly, accidents which either great attention to the work in hand might just have foreseen and a quick reaction might just have escaped; next, accidents due to some positive inattention or lack of muscular control (usually a muscular inaccuracy) either with extenuating circumstances (fifthly) or not (sixthly); and, finally, accidents due either to a lack of muscular control (often a lack of muscular coordination) or to inattention plus a slow reaction that misses the chance of escape.

The applicability of psychology to problems of industrial fatigue is given brief attention, but after reciting some methods of laboratory experiments and noting the effect of fatigue in schools, it is concluded that—

On the whole, in spite of their experiments in school and laboratory, the work of psychologists is still for the most part the reverse of illuminating for the problems of industry. The writers of general text books are content to introduce fatigue in the most cursory manner, and the student can obtain from them little idea of the problems which now demand attention.

OUTPUT IN RELATION TO HOURS OF WORK.

The health of munition workers committee was appointed by the British ministry of munitions, shortly after its organization, to study and advise as to the hours of labor and working conditions best adapted to promote the health and efficiency of the workers in munitions factories. Several memoranda have been issued by this committee. Two of these are concerned with the subject of hours of labor. The first (Memorandum No. 5)¹ made the general recommendation that weekly hours should not exceed 65 to 67 for men and 60 for women, but left open detailed proposals for particular operatives until the completion of more comprehensive investigations.

The second memorandum (No. 12)² presents the results of one of these investigations. It is concerned with the subject of output in relation to hours of labor. The object was to ascertain, for each of several important munitions operations, what system of working hours would produce the maximum output over a period of time.

¹ Monthly Review of the United States Bureau of Labor Statistics, June, 1916, p. 77.

² Great Britain. Ministry of Munitions. Health of munition workers committee. Memorandum No. 12, appendix to Memorandum No. 5 (Hours of Work). Statistical information concerning output in relation to hours of work. (Collected by H. M. Vernon, M. D.) London, 1916. 11 pp.

The cost of production was not considered, nor was personal study made of the health of the worker. It was assumed that any evil effects of long hours upon health would be reflected in output, and that the schedule of hours that assured the maximum productivity over a considerable period of time would necessarily be one that conserved the health and strength of the workers concerned.

The investigation covered several operations of distinctly different character, some demanding heavy, manual labor, others of a light, more or less sedentary type. In each case comparison is made of the relative output of the same group of workers at different periods under different time schedules. It was found that the time schedule producing the maximum output varied with the operation.

In operations involving heavy, manual labor, a greater output was uniformly obtained when the weekly hours were 60 or less than when longer hours were worked. Thus, the employment of women at the work of turning fuse bodies, for which the data obtained were most complete, may be cited. There were 100 such workers under observation for a period of 24 weeks. During the first 6 weeks of this period the average actual hours of labor were 68.2 per week. Taking the average hourly output of fuse bodies during these 6 weeks as 100, the total weekly output amounted to 6,820. During the latter part of the period the weekly hours were reduced to 59.7. The relative hourly output thereupon increased from 100 to 123, and this was sufficient to cause an increase in the total weekly output from 6,820 to 7,343.

The same tendency was found among men engaged in the very heavy work of sizing fuse bodies. Information was obtained regarding working hours and output of a group of 27 such workers over a period of 27 weeks. During the first 6 weeks the average weekly hours were 61.5, which, taking the relative hourly output at 100, made a total weekly output of 6,150. Later, with a reduction in working hours to 55.4 per week, the hourly output increased to 122 and the total weekly output to 6,759. Inasmuch as a slightly longer working week—56.2 hours—resulted in a still larger total output—6,969—the reports conclude that the week of maximum productivity is one of approximately 56 hours.

On the other hand, in the case of work involving no heavy labor, the investigation indicates that, while a reduction in the hours of labor almost invariably increases hourly output, it may not increase, and in some cases may decrease markedly, the total output. Thus, in the case of a group of men and youths engaged in the light labor of boring top caps, a reduction of working hours from over 70 a week to under 60 increased hourly production by only 8 per cent, with the result that the total weekly output was very greatly reduced.

As regards the whole output, it is to be emphasized that the method of comparison employed necessarily required the limiting of the operatives under observation to those that remained at work for a very considerable period of time. This automatically excluded all those who might have dropped out because unable to keep up the pace. "That is to say, the data quoted relates to the fittest who were strong enough to survive in the struggle, and not to the general mass of workers in all classes who tried their hand at munition work."

The report is given below in full:

1. In a previous memorandum (No. 5) the committee recommended that the average weekly hours of labor, including overtime, should not exceed 65 to 67 for men, and 60 hours for women. They suggested that it might be desirable to differentiate to some extent between different kinds of work, but they did not offer any detailed information, because at the time they had not sufficient data at their disposal to warrant definite conclusions. In order to remedy this deficiency, special investigators, including myself, have been engaged for many months past in collecting statistics concerning output in relation to hours of labor at a number of munition works, and I am now bringing forward a portion of the data which I have obtained as they appear to me, not only to afford information concerning the most suitable hours of labor in certain specific munition operations, but also to suggest some of the principles which should be followed in fixing the hours of labor for munition work in general.

2. I understand that the object of the committee is in many ways similar to that of the managers of munition works, and is to ascertain the hours of employment most likely to produce a maximum output over periods of months, or maybe even of years. They hold that output can not be maintained at the highest level for any considerable period if the conditions are such as to lead to excessive fatigue and to deterioration in the health of the workers. If health and physical efficiency are maintained they would raise no *a priori* objections to any given number of hours, however long. Further, in considering the relative value of, say, a 65-hour week as compared with a 55-hour week the question is whether the former or the latter will produce the greater total weekly output, rather than whether any extra cost involved by the additional output is justified by the economic or military conditions existing at any given time.

3. The statistical data collected with one exception concern the output of day shifts, and they were collected in large and recently built munition works, where the conditions of labor, such as lighting, warming, ventilation, and the provision of canteens, were as favorable as possible. All classes of operatives were on piecework, they were paid at a high rate of wages, and there were no trades-union restrictions whatever upon output. Hence there was every possible stimulus for them to exert their maximum powers of production. It is more convenient to describe first the data obtained relating to the output of women, as one group of them is specially complete.

WOMEN ENGAGED IN MODERATELY HEAVY LABOR.

4. The complete series of output data just referred to concerns women engaged in turning aluminum fuse bodies. The operatives were standing all day at capstan lathes and had to subject each fuse body to seven successive boring and cutting operations. These operations required close attention throughout and some delicacy of manipulation, so that no relaxation of effort was permissible

during the actual turning. Nearly 200 operatives were engaged on the work, but for the purposes of statistical analysis the output of only 100 of them could be considered. None were included unless they had attained their maximum output (which statistical examination of individual output showed was attained after 3 weeks' experience) and were engaged on the operation for 15 or more weeks out of the 24 weeks of the statistical period dealt with. For many months previous to this period the hours of labor had usually been $77\frac{1}{4}$ per week, except that in the second week of each month there was no Sunday labor, or the hours were reduced to $69\frac{1}{4}$ per week. From Table I we see that in the 6-week period just before Christmas the actual hours of work averaged 68.2 per week, or 6.6 hours less than the nominal hours (74.8 hours). Taking the average hourly output of fuse bodies as 100, the total (relative) output per week comes to 6,820. The next fortnight was much broken by the Christmas holiday. This amounted practically to a week if the days taken without permission be added to those officially sanctioned. It will be noted that in the week and a half before this holiday the output rose distinctly above the previous average (viz, 6 per cent), but in the half week immediately following it fell considerably below the average (viz, 11 per cent). Both of these variations form a typical feature of output data in relation to holidays, while another typical feature is the considerable and persistent rise which follows on a holiday. In the present instance this rise amounted to 11 per cent more than the average for the pre-Christmas period, or the total output reached its absolute maximum of 7,615 per week. The beneficial effects of the holiday upon output undoubtedly lasted four weeks and probably more, but the reduction in the hours of labor from January 24 onward precluded the possibility of tracing it further. After a 4 days' holiday at the beginning of August the output of a smaller group of the operatives, 40 in number, remained high for 5 weeks and was 7 per cent greater than the average output during the next 8 weeks.

TABLE I.—ONE HUNDRED WOMEN TURNING FUSE BODIES.

Week ending.	Actual hours of work per week.	Nominal hours of work per week.	Hours of broken time per week.	Relative output per working hour.	Hours of work multiplied by relative output.	Remarks concerning output.			
Nov. 14	62.0	68.2	67.5	5.5	100	6,820	Hourly output fairly steady.		
Nov. 21	68.8		75.5	6.7				98	
Nov. 28	66.7		75.0	8.3				99	
Dec. 5	70.9		77.2	6.3				102	
Dec. 12	69.1		76.2	7.1				96	
Dec. 19	71.8		77.3	5.5				99	
Dec. 26	41.8	68.6	46.0	4.2	107	111	7,615	Typical rise in hourly output before holiday.	
Jan. 2	32.8		89						
Jan. 9	65.2	68.6	69.3	4.1	107	107	7,615	Subsequent considerable increase of hourly output, whilst total output rises to a maximum, 12 per cent greater than that of pre-Christmas period.	
Jan. 16	70.3		77.2	6.9					113
Jan. 23	70.3		76.3	6.0					112
Jan. 30	62.4	61.6	68.5	6.1	102	107	6,591	Reduction of hours of labor from 74.3 to 67.5 has no immediate effect on hourly output, hence a considerable reduction of total output.	
Feb. 6	60.8		66.5	5.7					111
Feb. 13	49.2	48.4	52.0	2.8	106	106	7,343	Temporary shortage of material and reduction in hours of labor.	
Feb. 20	47.6		52.0	4.4					108
Feb. 27	61.4		66.5	5.1					125
Mar. 5	62.2	59.7	66.5	4.3	121	123	7,343	Effect of shorter hours of labor now established and hourly output reaches a maximum. Total output 8 per cent greater than in pre-Christmas period.	
Mar. 12	54.8		58.5	3.7					121
Mar. 19	62.1		66.5	4.4					121
Mar. 26	60.4		66.5	6.1					121
Apr. 2	58.6		64.8	6.2					121
Apr. 9	54.9		58.5	3.6					121
Apr. 16	62.9	47.0	66.5	3.6	126	125	7,343	Typical rise in hourly output before holiday (Easter).	
Apr. 23	47.0		49.5	2.5					126

5. The output data of Table I indicate that the beneficial effect on output of a reduction in the weekly hours of labor from 74.3 to 67.5 was not immediately manifest. Even a reduction to 52 hours seems to have no influence, but this was owing to a temporary shortage of material. From February 27 onward the hours of labor were $66\frac{1}{2}$ per week (or $58\frac{1}{2}$ in the second week of each month, when there was no Sunday labor), and we see that during a period of eight weeks the hourly output now averaged 23 per cent more than in the pre-Christmas period. The total output is 7,343 per week, or 8 per cent more than in the pre-Christmas period, in spite of the hours of labor being nominally 10.5 less, and actually 8.5 less. It is probable that the 60 hours worked per week were still too many to give the best total output, but at least they justify the statement that in order to attain a maximum output women engaged in moderately heavy manual labor should not work for more than 60 hours per week. Observations adduced below suggest that an equally good total output could be maintained if the actual working hours were reduced to 56 or less per week.

6. It might be thought that the great improvement in hourly output under the shorter hours régime was due, partly or wholly, to increased skill of the operatives or improvements in the machinery. Neither of these hypotheses can be substantiated. On classifying the operatives into two groups, according as they had been engaged in turning fuse bodies for about five months previous to the statistical period dealt with, or for about one and a half months on an average, the hourly output of the former group was found to be 1 per cent less than that of the latter group during the pre-Christmas period, and 1 per cent more than it was during the spring period, or in other words, it was the same within the limits of chance error. As regards the other alternative, no change had been made in the tools, the machinery, the nature of the operation, or the quality of the alloy used during the statistical period dealt with, or for $4\frac{1}{2}$ months previous to it.

7. Further proof of the advantage of shorter hours was afforded by the output data of some of the operatives on an earlier occasion. One group of them, 17 in number, worked only 51.8 to 62.6 hours per week for five weeks in June and July, and during the last three weeks of this period their hourly output was 18 per cent greater than that of another group of 14 operatives who were working the usual long hours. Subsequently, when both groups worked the same long hours, their output was identical.

BROKEN TIME AND SICKNESS.

8. It will be seen from Table I that the operatives lost on an average 6.6 hours per week of "broken" time before Christmas and 4.6 hours per week in the final 8-week period, or that they lost practically half a day per week in this way. But even this does not represent by any means the total time lost, for I have put in a separate category such time as was presumably lost by indisposition. I have made the arbitrary assumption that operatives who put in less than 45 hours per week of actual work out of a nominal $58\frac{1}{2}$ or more did so because of sickness rather than slackness, and I have excluded them in calculating the broken time data quoted in the table, though I retained them when calculating the output of fuse bodies per working hour. In the 6-week pre-Christmas period 4.1 per cent of the weeks worked by the operatives were "short" weeks of less than 45 hours, the average time of actual work amounting to 30.2 hours per week. In addition, the operatives were absent altogether for 2.1 per cent of the weeks. Sickness increased considerably after

Christmas, for in the 5-week period, January 3–February 6, 5.7 per cent of the weeks were short weeks, and 3.6 per cent of them were absent weeks, whilst in the 7-week period, February 21–April 9, no less than 12.4 per cent of the weeks were short weeks (averaging 28.6 hours), and 5.4 per cent of them were absent weeks, in spite of the fact that the nominal hours of labor were 10.8 less than in the pre-Christmas period.

9. There can be no doubt that the frequent occurrence of these short and absent weeks was due very largely to fatigue resulting from the strain of the heavy lathe work, for women engaged in light sedentary occupations showed only about a third as many lapses. I was able to obtain data concerning the timekeeping of no less than 400 women and girls engaged in the sedentary occupations of viewing, gauging, and assembling the component parts of fuses, and in Table II are given the average numbers of short and absent weeks observed in the 6 weeks before Christmas, when the nominal hours of labor were 76 per week; in the 5 weeks after Christmas, when they were 75 per week; and in the subsequent 7 weeks (Feb. 7–Mar. 26), when they were 64 per week. Taking first the women of 21 and over, for they alone are strictly comparable in age with the fuse-turning women, it can be seen that in each of the statistical periods dealt with these women put in only about a third as many short weeks as the fuse turners, while they were absent three times less frequently in two of the statistical periods and about half as frequently in the third period.

TABLE II.—WEEKS IN WHICH OPERATIVES WORKED LESS THAN 45 HOURS OR WERE ABSENT.

Age of operatives.	Number of operatives.	Short weeks.			Absent weeks.		
		6 weeks before Christmas.	5 weeks after Christmas.	7 weeks following (Feb. 7–Mar. 26, or Feb. 21–Apr. 9).	6 weeks before Christmas.	5 weeks after Christmas.	7 weeks following.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
14–16.....	71.....	1.3	1.7	3.6	2.9	1.7	1.4
17–18.....	58 (fuse).....	.3	3.1	5.0	.7	3.8	2.4
19–20.....	96 (gaugers).....	2.4	2.8	6.4	2.0	1.7	3.3
21 and over.....	175.....	1.4	2.1	3.4	.7	2.1	1.8
21 and over.....	100 (fuse turners)	4.1	5.7	12.4	2.1	3.6	5.4

10. As regards the girls engaged in sedentary work, the table shows that those of 19 to 20 years put in the most short and absent weeks, while those of 14 to 16 put in the least, and in this respect corresponded closely with the women of 21 and over. In Table III are recorded the average hours of broken time observed in the three statistical periods mentioned, and it will be seen that here again the girls of 14 to 16 resembled the women of 21 and over in keeping the best time, while the young women of 19 to 20 were on the whole the worst timekeepers. If comparison be made with the data relating to the fuse-turning women, it will be seen that on an average the adult women engaged in this sedentary work lost only about half as much time as they did.

11. It should be mentioned that these gauging women were not on piece rates like all the others, but were on day rates with the addition of a large bonus on output if above a certain minimum. Doubtless this system of remuneration tended to improve their time keeping to some extent, though probably not much. Thus the group of women recorded in the next section, who were engaged on

the light labor of milling a screw thread, were paid at piece rates, and yet kept time very much better than the fuse-turning women, and not much worse than the gauging women.

TABLE III.—BROKEN TIME OF WOMEN GAUGING FUSES.

Age of operatives.	Number of operatives.	Average hours of broken time per week during—		
		6 weeks before Christmas.	5 weeks after Christmas.	7 weeks following.
14-16.....	71	2.9	3.9	3.2
17-18.....	58	3.9	5.2	3.0
19-20.....	96	3.5	5.9	4.0
21 and over.....	175	2.5	4.7	3.0

12. It is evident that in fixing the number of hours required to produce a maximum output close attention must be paid to the effect of any given number of hours on timekeeping. If an increase in the hours of labor from 50 to 60 per week caused the total output of the operatives, taken as a group, to increase permanently by, e. g., 10 per cent, it would be worth while to adopt these hours, but if after a few weeks of the longer hours it were found that 5 per cent more of the operatives were absent from sickness, and 10 per cent more of them were putting in short weeks of an average of 30 hours instead of the nominal 60 hours, there would be no gain whatever in the total output. Now it will be seen from Table II that in the third of the statistical periods dealt with 9 per cent more of the fuse-turning women were putting in short weeks than of the gauging women, while 3.6 per cent more of them were absent. If, therefore, it were found that by cutting down the hours of actual work of the fuse-turning women from 60 to 56 they were able to reduce their short and absent weeks to those shown by the gauging women, the output would remain practically unchanged. For other and independent reasons, to be mentioned later on, it seems probable that a reduction of the working hours to 56 per week would have no adverse effect on output, and hence there can be little doubt that this number of hours is the absolute maximum for the type of work under consideration, and that if anything it errs on the side of excess.

13. Another point to be borne in mind in fixing hours of labor is the time taken by the operatives to get from their homes to the works, and vice versa. Personal observation leads me to think that the operatives referred to in this memorandum took on an average somewhat less than an hour each way, though I have no exact statistical data on the subject. There was an efficient tram service at their disposal.

WOMEN ENGAGED IN LIGHT LABOR.

14. In the next type of munition work to be described, the operatives were milling a screw thread on the fuse bodies. This necessitated their standing at semiautomatic machines, where they removed one fuse body and inserted another every minute or so. The requisite muscular effort was moderate and simple in character, and took up only about a fifth of the total time required for the operation. For the remaining four-fifths of the time the operative had nothing whatever to do, and so the call upon her attention and her muscles was very much less than that experienced by the operatives previously described.

The output of 21 women was investigated over a similar statistical period, but it seems unnecessary to quote the results in full. The average records adduced in Table IV show that the hourly output varied in the same direction as that of the fuse-turning operatives, but to a very much more limited extent. In the 3 weeks after Christmas it was only 6 per cent greater than in the 5 weeks before it, and since the average hours of work were somewhat shorter, the total output remained practically unchanged. A considerable reduction of working hours did not lead at first to any improvement of hourly output, but this established itself after 4 weeks, and was maintained at a steady level during the next 8 weeks. In that the average excess of hourly output amounted only to 9 per cent above that of the pre-Christmas period, the total output became reduced to 4 per cent below it. However, in the 3 weeks after Easter the hourly output improved a further 3 per cent so that the total output reached to within 0.6 per cent of the pre-Christmas value. Probably the best number of hours is something between the limiting values investigated, or about 62 hours, for if the output of 109 per hour were maintained over this time, the total output would work out at 6,758, or slightly above that of the pre-Christmas period.

TABLE IV.—TWENTY-ONE WOMEN MILLING A SCREW THREAD.

Statistical period.	Average hours of actual work.	Average hours of broken time.	Average (relative) hourly output.	Hours multiplied by output.
5 weeks preceding Christmas (Nov. 15-Dec. 19).....	67.4	4.4	100	6,740
2 weeks at Christmas (Dec. 20-Jan. 2).....	44.7	3.5	98	.....
3 weeks after Christmas (Jan. 3-Jan. 23).....	63.7	3.0	106	6,752
4 weeks later (Jan. 24-Feb. 20).....	53.1	2.6	104	5,522
8 weeks later (Feb. 21-Apr. 16).....	59.3	3.6	109	6,463
2 weeks at Easter (Apr. 17-Apr. 30).....	39.4	2.7	108	.....
3 weeks after Easter (May 1-May 21).....	59.8	2.6	112	6,698

MEN ENGAGED IN HEAVY LABOR.

15. The labor assigned to male munition workers is, as a rule, considerably heavier than that assigned to women; but making due allowance for the greater strength and endurance of the man, we find that his output is similarly affected by a reduction in the hours of labor. One of the most fatiguing types of munition work so far investigated by me is that of "sizing." In the sizing of fuse bodies the article is usually subjected to four separate operations, in each of which it is clamped to a small flywheel and handle and is screwed through a steel tap so as to cut a screw thread on it. The operations require no manual dexterity, but they are a great and continuous strain on the muscles of one arm and shoulder and to a less extent on those of the back. The operatives seldom use both arms, as they prefer to keep the "screwing" hand dry and use the other for picking up the oil-covered fuse bodies. The output of a group of 27 operatives was investigated and the mean results are given in Table V. The hours of labor were always shorter than those worked by the women. They never exceeded 71 hours in any one week and seldom included Sunday labor. The hourly output showed a marked drop during the Christmas fortnight and a considerable rise (to 118) for the first week after this fortnight, but the average output during the six weeks after Christmas was only 9 per cent greater than that of the pre-Christmas period in spite of the fact that the weekly hours of labor were 10.4 shorter. Evidently the operatives took a long time to adapt their rate of production to the shorter hours, for the hourly output subsequently averaged 22 per cent in excess of that of the pre-Christmas

period. This caused the total output to be no less than 10 per cent greater, and it is probable that even this figure does not represent the full effect of reducing the hours of labor, for after Easter the hourly output improved a further 2 per cent and the total output was increased to 13 per cent above that of the pre-Christmas period. However, a part of this improvement may have been only the temporary effect of the holiday. The week February 14-20 is omitted, as the operatives worked only 41 hours, owing to shortage of material.

TABLE V.—TWENTY-SEVEN MEN SIZING FUSE BODIES.

Statistical period.	Average hours of actual work.	Average (relative) hourly output.	Hours multiplied by output.
6 weeks preceding Christmas (Nov. 8-Dec. 19).....	61.5	100	6,150
2 weeks at Christmas (Dec. 20-Jan. 2).....	38.3	89	-----
6 weeks after Christmas (Jan. 3-Feb. 13).....	51.1	109	5,570
8 weeks later (Feb. 21-Apr. 16).....	55.4	122	6,759
2 weeks at Easter (Apr. 17-Apr. 30).....	41.0	112	-----
3 weeks later (May 1-May 21).....	56.2	124	6,960

16. The broken time is not quoted in the above table, as the nominal hours of labor were rather uncertain. Moreover, the operatives appeared to have had some freedom in selecting their own hours of work. The plan adopted in calculating the weekly hours of actual work was different from that observed in the other data quoted in this memorandum, for all weeks were included in which 20 hours or more were worked. The reason of this change was that these sizers, though they were absent altogether for only 1.8 per cent of the weeks included in the statistical period dealt with, were in the habit of putting in short weeks of 40 hours or less with some frequency. If only those operatives who put in 45 hours or more had been included, the average weekly hours of actual work would have come to about two hours more than the figures quoted in the table.

17. The operatives engaged in sizing fuse bodies were all full-grown men, but certain other sizing operations were performed by youths. The output of one of these groups may be quoted, but in that it concerns only nine operatives, the data are not so reliable as those just recorded. The youths 14 to 17 years of age were sizing steel base plugs, and from Table VI we see that their hourly output was 16 per cent greater in the 4 weeks after Christmas than it had been before, in spite of a slight increase in the hours of labor, whilst it was no less than 42 per cent greater in the 11 subsequent weeks when the hours of labor were reduced from 70.3 to 57. In consequence, the total output attained a value 19 per cent in excess of that of the pre-Christmas period. Even this value does not represent the full effect of the reduced hours of labor, for in the 3 weeks after Easter the hourly output was 55 per cent above that of the pre-Christmas period and the total output 38 per cent above it. Such results are so astonishing that one is naturally inclined to doubt their validity, but there appears to be no reason for denying their substantial accuracy. The boys must have been seriously overworked by the long hours, and hence the 8 to 12 hour reduction of the working week accelerated their rate of production much more than did the 6-hour reduction accelerate that of the men "sizers."

TABLE VI.—NINE YOUTHS SIZING BASE PLUGS.

Statistical period.	Average hours of actual work.	Average (relative) hourly output.	Hours multiplied by output.
5 weeks preceding Christmas (Nov. 15-Dec. 19).....	68.3	100	6,830
2 weeks at Christmas (Dec. 20-Jan. 2).....	46.3	106	.....
4 weeks after Christmas (Jan. 3-Jan. 30).....	70.3	116	8,155
11 weeks later (Jan. 31-Apr. 16).....	57.0	142	8,094
2 weeks at Easter (Apr. 17-Apr. 30).....	42.1	135	.....
3 weeks later (May 1-May 21).....	60.9	155	9,440

MEN ENGAGED IN MODERATELY HEAVY LABOR.

18. Typical examples of moderately heavy labor are found in shell making, and all the data described in this section relate to the output of 3-inch shrapnel shells. One of the most important and lengthy of the operations is that known as boring the powder chamber. This operation is performed on capstan lathes provided with three sets of boring tools, and it requires considerably more muscular energy than that involved in turning fuse bodies, though not so much as in sizing. At one shell factory, where the male operatives were being largely replaced by women, I was informed that though the women attained a good output in most operations, they produced only about half as many shells as the men did in this particular operation, since they had not the necessary strength.

19. The data in Table VII concern the output of 23 operatives, all of whom had been 4 months or more at the process previous to the statistical period recorded. During these months they worked at first for 53 hours per week, and subsequently for 49½ hours, and had attained their maximum output for these particular hours of labor. When their hours were suddenly increased to 64 per week (7 hours on Sunday), we see that they maintained their hourly output for three weeks with very little diminution. After this time there was a shortage of material at irregular intervals, so the output data were rendered valueless for statistical purposes, but even if the hourly output had fallen considerably lower, the total output would still have remained higher during a 60-hour week than during a 48-hour week.

TABLE VII.—TWENTY-THREE MEN BORING THE POWDER CHAMBER.

Week ending—	Weekly hours of actual work.	Hours of broken time.	(Relative) hourly output.	Hours multiplied by output.
Nov. 7.....	48.5	1.0	100	4,780
Nov. 14.....	47.1	2.4	100	
Nov. 21.....	59.5	4.5	107	
Nov. 28.....	60.5	3.5	98	
Dec. 5.....	59.1	1.4	94	5,970

20. An important operation is to "finish, turn, and form" the shell, which consists in taking off a fine turning, and afterwards filing down the shell. This operation probably needs the expenditure of about as much muscular energy as that of turning fuse bodies. The data in Table VIII show the output of 22 men who had been engaged at this work for 10 weeks, on an average, previously to the statistical period dealt with.

TABLE VIII.—TWENTY-TWO MEN, FINISHING, TURNING, AND FORMING 3-INCH SHELLS.

Week ending—	Weekly hours of actual work.	Nominal hours of work.	Hours of broken time.	(Relative) hourly output.	Hours multiplied by output.
Aug. 29.....	62.0	64	2.0	98	6,030
Sept. 5.....	64.1	65	.9	100	
Sept. 12.....	51.6	52	.4	101	
Sept. 19.....	63.4	64	.6	101	
Sept. 26.....	52.3	53	.7	105	5,905
Oct. 3.....	39.0	39	.0	112	
Oct. 10.....	51.2	52	.8	112	
Oct. 17.....	53.0	53	.0	118	
Oct. 24.....	51.2	53	1.8	112	

21. The hours of labor in the immediately preceding week had been 64, but before that they had been 49 for 3 weeks, preceded by 64 or more for 7 weeks. We see that, on an average, the hourly output during the last 3 weeks recorded in the table, when the hours of labor averaged 51.8 hours, was 14 per cent greater than in the first 4 weeks when they averaged 60.3 hours. It is probable that a portion of this improvement was due to increased skill of the operatives, who were found to require 3 or 4 months' experience before attaining their maximum output, but assuming that the whole of the improvement was the direct result of the reduced hours of labor, the total output is still less for the short-hour weeks than for the long ones. The timekeeping was extremely good and suggests that the operatives could easily stand the 60-hour week, for not only was the broken time 1 hour per week or less, but during the 60-hour period recorded the operatives were never absent for a whole week, and they put in only 4 per cent of short weeks. It should be mentioned that in calculating broken time the 45-hour limit referred to previously was retained for operatives working $58\frac{1}{2}$ hours or more per week, but with operatives working a nominal 52 hours only those were excluded who put in less than 40 hours of actual work, and with operatives working a nominal $49\frac{1}{2}$ hours only those who put in less than 38 hours of actual work.

MEN AND YOUTHS ENGAGED IN LIGHT LABOR.

22. In the operation known as "rough turning," the rough shell is turned approximately to size. During four-fifths of the time required the operative merely watches the lathe, so the labor is very much lighter in type than that previously described and resembles that required for milling a screw thread on fuse bodies. The hourly output of 18 men was investigated and was found to be constant within the limits of chance error, whether they were working 49, 53, or 64 hours per week. For instance, on changing from a $49\frac{1}{2}$ -hour to a 64-hour week, the hourly output during three consecutive weeks was 100, 102, and 101 on that of the preceding weeks taken as 100. Again, when the 20 operatives of a permanent night shift had their hours increased from $47\frac{1}{2}$ to $53\frac{1}{2}$ for one week, and then to 67 hours for two weeks, their output was 99, 97, and 96 in the 3 weeks respectively, that of the preceding weeks being taken as 100. There can be little doubt, therefore, that these operatives could have worked longer weekly hours than 64 or 67 without greatly diminishing their hourly output, and so have attained a greater total output. This conclusion is strongly supported by the data for youths which are now to be recorded.

23. The youths, 15 to 18 years of age, were engaged in boring out the top caps of fuses by means of semiautomatic machines. About four times a minute they unclamped one cap and clamped in another, these two clampings together

occupying less than two seconds. For the rest of the time they stood at their machines doing nothing. From the average data recorded in Table IX, which concern the output of 17 operatives, it will be seen that before Christmas they averaged 75.6 hours per week of actual work out of the 78½ nominal hours. In the 6 weeks after Christmas their hourly output went up 6 per cent, but in that they averaged 4.7 hours a week less than before, their total output was slightly diminished. The output of the week February 14-20 is omitted, as there was a shortage of material, but in the next 8 weeks, when the average hours were reduced to 59.4 per week, the output rose another 2 per cent. This rise by no means compensated for the considerable reduction in working hours, so we find that the total weekly output was actually 15 per cent less than in the pre-Christmas period.

TABLE IX.—SEVENTEEN YOUTHS BORING TOP CAPS.

Statistical period.	Average hours of actual work.	Average hours of broken time.	Average (relative) hourly output.	Hours multiplied by output.
5 weeks preceding Christmas (Nov. 15-Dec. 19).....	75.6	2.9	100	7,560
2 weeks at Christmas.....	50.0	2.7	106	.....
6 weeks after Christmas (Jan. 3-Feb. 13).....	70.9	4.6	106	7,515
8 weeks later (Feb. 21-Apr. 16).....	59.4	4.4	108	6,415
2 weeks at Easter (Apr. 17-30).....	40.8	4.6	95	.....

24. It seems probable, therefore, that to attain maximum output 70 hours or more per week of this light labor must be worked. It will be seen from the table that when the operatives were working over 70 hours per week their broken time was not excessive. Moreover, they put in only 2 per cent of short weeks and 3.6 per cent of absent weeks on an average, so the long hours did not appear to affect their health.

COMPARISON OF RESULTS.

25. The various types of labor investigated may conveniently be divided into five, viz, very heavy, heavy, moderately heavy, light, and very light. Of these types the "very heavy," such as sizing fuse bodies, and the "heavy," such as boring the powder chamber, are not well suited to women. On the other hand, the "light" type, such as boring top caps and rough-turning 3-inch shells, had better be confined to women, as it is waste of muscle to appropriate them to men, or even to youths. Very light types of labor such as sedentary gauging operations should evidently be confined to women and girls.

26. We have seen that for men engaged in the very heavy labor of sizing fuse bodies the maximum hours of actual work appeared to be 56 or less per week; for men engaged in boring the powder chamber and in turning and finishing shells they were probably 60 or rather more, whilst for men rough-turning shells and for youths boring top caps they were probably 70 or even more. On the other hand, for women engaged in the moderately heavy labor of turning fuse bodies the maximum hours were 56 or less, whilst for women on the light labor of milling a screw thread they were rather over 60 hours. In so far as time keeping is a criterion, women and girls on the very light work of gauging fuses appeared to stand even 76 hours fairly well, but it is more than likely that their actual output was little, if any, greater than when they were working 64 hours, and so it is probable that this figure should be regarded as their maximum.

27. It must be realized that all of these data are provisional, but they clearly justify the conclusion that the hours of labor should be varied between wide limits according to the character of the work performed. This obvious fact is not realized by many managers of munition works, and the tendency is usually toward uniformity of hours for all types of labor and for workers of both sexes. The data adduced suggest that not only are women unsuited to the heavier types of work, but that even when engaged on the moderate and light types they are unable to stand such long hours as the men. Several sets of operatives, both male and female, were kept under close observation for many days in order that their powers of application might be investigated. Men engaged in boring the powder chamber and in turning and finishing shells were found, almost without exception, to stick to their work with admirable persistence, and it was very seldom that they rested even for a minute. On the other hand, women engaged in turning fuze bodies rested for times which in aggregate amounted to $1\frac{1}{2}$ hours out of the 12-hour day, and over an hour out of the 10-hour day, in addition to the hour or so of compulsory rest required for attention to their lathes at the hands of the tool-setters. About half an hour of the voluntary rest pauses occurred on starting and stopping work, but much of the remaining hour or half hour was probably due, not to idleness on the part of the women, but to fatigue, and to an instinctive knowledge that short rest pauses helped to prevent undue fatigue. Still, it would have been better if these pauses and the times lost in starting and stopping had been curtailed by, e. g., half an hour a day, and the women had been permitted a corresponding reduction in their weekly hours of labor.

28. It is to be borne in mind that all of the times mentioned are the maximum hours of actual work, supposing that a maximum output is required regardless of cost of production. They necessarily impose a great strain on the operatives, and there can be no doubt that in many instances the strain was too great to be borne, and that the operatives had to drop out altogether. That is to say, the data quoted relate to the fittest who were strong enough to survive in the struggle, and not to the general mass of workers of all classes who tried their hand at munition work. It is almost impossible to discover the extent of this weeding out, but it is inevitably considerable. Hence the best hours of work, suited for peace times, are in every case considerably shorter than those mentioned, though the principle of graduating the number of hours of labor to the type of work performed still holds with undiminished force.

FURTHER POINTS FOR CONSIDERATION.

29. Though stern necessity may compel long hours of labor on the part of many munition workers, it is evident that, provided maximum output is maintained, the shorter the times for which they are shut up in the factories the better their chances of health and happiness. Hence everything possible should be done to speed up the rate of production so far as this can be done without making an extra call upon the physical energies of the operatives. Though I have no intention on the present occasion of discussing the matter in detail, I wish to suggest two simple plans of appreciably increasing the rate of production. The first depends on greater promptness in starting work. A few concrete instances will bring home the importance of this point, at least in some munition factories. In most works the motive power is electric, and in some the power supplied to each section is registered by a separate wattmeter. The machinery is started running shortly before work begins, and as the operatives get going, one after another, the power consumption steadily rises to a

maximum, which is attained when all the operatives have started. By means of these power records the rate of starting and stopping work can readily be ascertained in many instances, though not in factories where time is spent in a preliminary collection of necessary tools and material, and in their adjustment. The accompanying figure [figure not reproduced] records the increments of electric power over that required to drive the free-running machinery, on starting and stopping the afternoon spell of work. The continuous line represents the power supplied to a large shell shop which turned out 30,000 3-inch shrapnel shells per week. We see that the power supplied started mounting up 2 minutes after starting time, and reached half its full value in 4 minutes. The dotted-line curve, representing the power supplied to a section of 200 women turning fuse bodies, did not begin to rise till 5 minutes after starting time, and did not attain half its maximum value until 11 minutes after starting time. In other words, the operatives wasted about 7 minutes more in starting than did the operatives in the shell shop, most of whom were men. On the other hand, the fuse-turners finished more strongly than the shell-shop operatives, as can be seen by comparing the two curves given on the right side of the figure, and it was found that both sets of operatives lost, on an average, about the same aggregate of time in starting and finishing during the course of the whole day, viz, 34 minutes. The shell-shop operatives did not start much more promptly than the fuse-turners in the morning, partly because there was more delay in the arrival of their material, but in spite of this, if the operatives of both shops had started equally promptly, and finished equally strongly, 9 minutes out of the 34 would have been saved. There was no inherent reason why work should have been started promptly in one shop and not in the other. It was merely a custom of the particular shop, and even then the custom was not a fixed one. A series of meter readings of the women's section were taken for several days before and after the Easter holiday, and 9 days before the holiday the average amount of time wasted in starting after dinner was found to be 11 minutes; 2 days before it was 14 minutes. Two days after the holiday it was 16 minutes; 3 days after it was 15 minutes; and five days after it was 12 minutes. That is to say, it increased with the slackness of the operatives caused by the immediate approach of the holiday, and still more with their post-holiday lassitude.

30. There can be no necessity for the waste even of 25 minutes in starting and finishing work. Ten or 15 minutes should be ample allowance, and the 20 minutes thereby saved could be deducted from working hours without any reduction of output. At one large works the manager informed me that he made a point of going into the various shops at starting time and seeing that the operatives began work promptly. In this way a considerable amount of time was saved.

31. The other method of speeding up production on which I wish to lay stress has already been referred to in an earlier memorandum (No. 7). It consists in the regulation of rest pauses. The custom in many munition works is for the operatives to work for a spell of five hours, and then, after an hour's interval, for another spell of $4\frac{1}{2}$ to 5 hours. Such spells are undoubtedly too long in many types of munition work, but if a second break is introduced in the working day much extra time is lost in starting and stopping work. If the operatives are left to themselves they take rests at irregular and often unsuitable times. Hence it would be much better if the rest pauses were chosen for them. For instance, a 10-minute break in the middle of the morning and afternoon spells, during which the operatives remain at their machines, but take tea or other nutriment brought them by boys or by traveling canteens, has

been found a valuable aid to output in some munition works. Some types of work need longer and more frequent rest pauses than others, and the best times can be determined only by experiment. After being fixed they should be made compulsory and rest pauses at other times be checked so far as possible.

AMERICAN AND FOREIGN EXPERIENCE WITH THE SHORTER WORKDAY.

Studies of the effect of changes in hours of labor upon efficiency, such as the report reprinted above, are very few in number. Of these, the four briefly summarized below are of particular interest as representing experiences in different industries and in different countries.

COMMONWEALTH STEEL CO., GRANITE CITY, ILL.¹

The workmen in the open-hearth department and boiler room were changed, in 1912, from a system of two 12-hour shifts to one of three 8-hour shifts. To do this required increasing the number of men in the open-hearth department from 22 to 33, but in the boiler room it was necessary to increase the number of men only from 8 to 10. The hourly wage rates of all the men concerned were increased an average of 20 per cent. Exactly the same products were made under the two systems of working hours.

Under the 8-hour system, in spite of the increase in hourly rates, there was a slight decrease in the cost of production, owing to the higher efficiency of the workers. There were very considerable reductions in the amount of pig iron charged and in the amount of fuel oil consumed. Also the quality of the product was very much improved.

ZEISS OPTICAL WORKS, JENA, GERMANY.²

The operation of these works was changed from a 9-hour to an 8-hour basis in 1900. In studying the effect of this change upon efficiency, comparison is made between the earnings of pieceworkers during the year preceding the change and the year following. The comparison involves 233 workmen. All were excluded whose output might have been affected by special causes, such as ill health, and also all who had not been in the firm's employ for at least 4 years and who were not at least 22 years of age. Piece rates remained the same.

Under the 8-hour system, as compared with the superseded 9-hour system, the hourly earnings of pieceworkers increased 16.2 per cent. This represents a greater daily output than before, inasmuch as a pieceworker, piece rates remaining the same, need only increase his

¹ Report on conditions of employment in the iron and steel industry in the United States. S. Doc. No. 110, 62d Cong., 1st sess., Vol. III, p. 187.

² Abbé, Ernst. Die Volkwerbschaftliche Bedeutung der Verkürzung des industriellen arbeitstages. Jena, 1901. Digest in Goldmark's "Fatigue and Efficiency." New York, 1912. pp. 155-166.

hourly earnings $12\frac{1}{2}$ per cent in order to produce as much, and thus obtain the same earnings under an 8-hour day as under a 9-hour day. Moreover, the increase of 16.2 per cent referred to was fairly uniform for different occupations and for workers of different age groups.

ENGIS CHEMICAL WORKS, NEAR LIEGE, BELGIUM.¹

Engaged in the manufacture of zinc blend and sulphuric acid. Principal employment of labor, oven tending. Started in 1888 with system of two 12-hour shifts. Changed four years later to the plan of three 8-hour shifts. Under the 12-hour shifts there were 10 hours of actual work. Under the 8-hour shifts there were $7\frac{1}{2}$ hours of actual work. The furnaces were thus operated $22\frac{1}{2}$ hours out of the 24, as against 20 hours previously.

Within 6 months after the change was effected the workers had equalled in $7\frac{1}{2}$ hours the previous output of 10 hours, and the daily earnings for $7\frac{1}{2}$ hours' work equaled the amount formerly earned in 10 hours. The total cost of production was reduced 20 per cent and the quality of the output improved. Also it was noted that the morale of the workers, as well as their physique, was raised to a much higher level.

SALFORD IRON WORKS, MANCHESTER, ENGLAND.²

Engaged in the manufacture of steam engines, pumping machinery, electrical machinery, etc. Number of employees, 1,200, about one-third being pieceworkers. For the 6 years prior to 1893 the hours of labor had been 54 per week during the first part of the period and 53 during the latter part. In 1893 a 48-hour week was introduced and careful records kept of costs and output for a year. No change occurred in the character of the work done, and the wages remained the same as before.

At the end of a year's time it was found that the amount of output for the year was slightly greater than the average of the 6 preceding years. Saving was affected in "wear and tear," fuel, etc., which balanced an increase of 0.4 per cent in wage cost. The reduction of hours also led to a rearrangement of working time. Previously it had been the custom of employees to have two meal periods at the plant, breakfast and lunch. With the shorter day the men had breakfast before coming to work. This was regarded as beneficial to the men and to their families as well as to the work.

¹ Fromont, L. G. *Une expérience industrielle de réduction de la journée de travail*. Brussels, Leipzig, etc., 1906. (Institut Solvay.) Digest in Goldmark's "Fatigue and Efficiency," New York, 1912. pp. 144-155.

² "Eight Hours for Laborers on Government Work." A report of the Secretary of Commerce and Labor to the House Committee on Labor. Washington, 1905. pp. 78-81.

REPORT OF THE CHIEF INSPECTOR OF FACTORIES AND WORKSHOPS, GREAT BRITAIN.

According to the report of the chief inspector of factories and workshops of Great Britain for the year 1915,¹ the most important part of the work undertaken by the department with a view to facilitating recruiting has been the institution of trade conferences to consider what measures of reorganization might be necessary in order to free as many men as possible for the army and how far the men so released could be replaced by other classes of labor. This reorganization of labor, it was found, involves the temporary suspension of trade rules and customs, and the points to be settled were chiefly those relating to the terms and conditions under which such suspension should take place. The operatives seemed to feel that those who left their employment to join the forces should be guaranteed a position when they returned, that suspension of rules should be regarded as a war emergency only, that there should be a return to former conditions at the end of the war, and that there should be a fair settlement of the wage question affecting the employment of women or other labor called in to take the place of men. As a result of these conferences, agreements were entered into between employers and employees in several of the more important industries, notably cotton, hosiery, woolen and worsted, silk, felt hat, printing, bleaching and dyeing, woodworking and furniture, boot, wholesale clothing, earthenware and china. These agreements, in general, provide for reinstatement of workers and a return to prewar conditions, the nonemployment of men eligible for military service, and, if necessary, the dismissal first of men of military age, the extended employment of women, and a general readjustment of labor to meet the exigencies of war.

Although a large number of applications for orders were received from firms desiring a relaxation of certain regulations governing factory operation, the employment of labor, etc., the report notes a marked reduction in the amount of latitude sought and allowed. For instance, it is stated that the comparatively few fresh demands for permission to work on Sunday were confined to cases where sudden and unexpected emergencies had arisen or the processes were continuous. "Requests for Saturday afternoon work have also become less common, and there seems to be a more general recognition of the advantages of a week-end rest." Most of the applications for orders came from munition works which desired permission to work overtime. The general order affecting such work was the same as

¹ Great Britain. Home Office. Annual Report of the Chief Inspector of Factories and Workshops for the year 1915. London, 1916. 15 pp.

that in force the previous year, although it is being modified to bring the latitude allowed within the limits recommended by the health of munition workers committee.¹ This order provides for three schemes, as follows:

1. Overtime, with a limit of 5 hours per week for women, boys between 14 and 16, and girls between 16 and 18 years of age, and of 7½ hours for boys over 16 years and also (in a few cases of special urgency) for women.
2. Day and night shifts for women and boys over 16 years, and in certain cases for boys over 14 years of age.
3. Eight-hour shifts for women, girls over 16, and boys over 14 years of age.

In this connection the report notes a distinct tendency toward a reduction of hours in many factories, including some of the large munition firms.

Sunday labor has been found to be more and more unsatisfactory; apart from the ill effects which must follow from a long-continued spell of working seven days a week, it too often results in loss of time on other days of the week and in consequent disorganization, and employers were perhaps the more ready therefore to accept the recommendations of the health of munitions workers committee that it should be abandoned.²

In a circular issued by the ministry of munitions the importance of a weekly rest period was pointed out in the following statement:

The aim should be to work not more than 12 shifts per fortnight or 24 where double shifts are worked * * * Where three 8-hour shifts are worked, not less than two should be omitted on Sunday. It is, in the opinion of the minister, preferable to work a moderate amount of overtime during the week, allowing a break on Sunday, rather than work continuously from day to day. It is still more strongly his view that where overtime is worked in the week, Sunday labor is not desirable.

Specific industries in which overtime has been allowed are listed, with a record of the persons affected—in most cases women and young people over 14 or 16 years of age—and a statement of the latitude permitted.

It seems to be indicated by instances mentioned in the report that long spells of work without a break are not conducive to good output, and this has prompted the issuance of a rule providing that, so far as protected labor (that is, women and young persons) is concerned, the utmost extension of the unbroken spell to be allowed shall be 5 hours in textile and 5½ hours in nontextile work; and "save in the few cases where the normal period of employment is not exceeded, such extension is allowed only on a condition that tea or other hot refreshment is available in the rooms for the workers during the spell."

¹ The recommendations of the committee as to hours of work and overtime are contained in their Memorandum No. 5, an account of which appeared in the MONTHLY REVIEW for June, 1916, pp. 77-79.

² See MONTHLY REVIEW for May, 1916, p. 66, for a digest of Memorandum No. 1, on Sunday labor, issued by the health of munitions workers committee.

The health of munition workers committee has reported that as regards munition works it "had not found that, as yet, the strain of long hours had caused any serious breakdown among the workers, though many general statements indicative of fatigue had been received,"¹ and this, the chief inspector states, is confirmed by the fact that "there is no evidence of any marked increase in the sickness rates; the inspectors have not found any number of individual cases, save amongst the foremen and managers and amongst some of the older men, where the workers admit having suffered in health; and there has been an almost entire absence of complaints that operatives are being taxed beyond their strength." However, it is admitted that there are indications of fatigue of a less serious kind. "Individual workers confess to feeling tired and to becoming 'stale'; there are complaints of bad timekeeping and there is a general tendency toward a reduction of hours. But fatigue of this kind is quickly overcome by a temporary rest from overtime, though the importance of such relief has not always received sufficient recognition."

Considerable attention was given by the chief inspector's staff to the matter of fencing machinery, means of escape in case of fire, ventilation and sanitation in factories—problems emphasized by the great increase in machinery, the long hours, the introduction of female labor into factories hitherto reserved entirely for men, and the general shortage of labor. Satisfactory progress along these lines is noted.

Special mention is given to the advance made in welfare work,² in the provision of canteens and mess-room accommodation, and in the arrangements for dealing with cases of sickness and injury, more particularly in munition works, "an effect that is likely to be felt and to spread long after the war is ended and to leave behind a permanent improvement in factory life."

IMMIGRATION IN SEPTEMBER, 1916.

The number of immigrant aliens admitted into the United States during the first 10 months of 1916 has been in excess of the number admitted during the corresponding months of 1915. There has also been an increase from month to month during all of the 10 months, with the exception of June, which showed a decrease of 0.8 per cent. These facts are brought out in the statement following.

¹ Memorandum No. 5, entitled "Hours of Labor," was noted in the MONTHLY REVIEW for June, 1916, pp. 77-79.

² Memorandum No. 2, entitled "Welfare Supervision," prepared by the health of munition workers committee, was noted in the MONTHLY REVIEW for May, 1916, pp. 68, 69.

IMMIGRANT ALIENS ADMITTED INTO THE UNITED STATES IN SPECIFIED MONTHS,
1913, 1914, 1915, AND 1916.

Month.	1913	1914	1915	1916	
				Number.	Per cent increase over preceding month.
January.....	46,441	44,708	15,481	17,293	8.5
February.....	59,156	46,873	13,873	24,740	43.1
March.....	96,958	92,621	19,263	27,586	11.5
April.....	136,371	119,885	24,532	30,560	10.8
May.....	137,262	107,796	26,069	31,021	15.1
June.....	176,261	71,728	22,598	30,764	1.8
July.....	138,244	60,377	21,504	25,035	18.6
August.....	126,180	37,706	21,949	29,975	19.7
September.....	136,247	29,143	24,513	36,398	21.4
October.....	134,140	30,416	25,450	37,056	1.8

¹ Decrease.

Classified by races, the number of immigrant aliens admitted into and emigrant aliens departing from the United States during September, 1915 and 1916, was as follows:

IMMIGRANT ALIENS ADMITTED INTO AND EMIGRANT ALIENS DEPARTING FROM
THE UNITED STATES, SEPTEMBER, 1915 AND 1916.

Race.	Admitted.		Departing.	
	September, 1915.	September, 1916.	September, 1915.	September, 1916.
African (black).....	424	929	77	83
Armenian.....	51	128	283	5
Bohemian and Moravian.....	96	40	4	2
Bulgarian, Servian, Montenegrin.....	294	200	78	17
Chinese.....	127	217	185	81
Croatian and Slavonian.....	76	22	14	.....
Cuban.....	525	530	167	344
Dalmatian, Bosnian, Herzegovinian.....	4	5	1	1
Dutch and Flemish.....	472	437	56	53
East Indian.....	5	15	9	1
English.....	3,516	3,652	732	719
Finnish.....	335	560	16	74
French.....	1,588	2,992	188	190
German.....	1,024	793	109	64
Greek.....	1,759	5,448	636	191
Hebrew.....	1,202	2,328	15	22
Irish.....	2,303	2,296	171	252
Italian (north).....	532	571	429	166
Italian (south).....	2,028	5,228	16,075	876
Japanese.....	654	883	63	58
Korean.....	12	21	1	.....
Lithuanian.....	57	60	3	4
Magyar.....	93	41	52	13
Mexican.....	765	1,877	24	73
Polish.....	335	341	33	14
Portuguese.....	1,308	741	301	205
Roumanian.....	67	38	18	6
Russian.....	264	362	302	697
Ruthenian (Russniak).....	215	104	1	.....
Scandinavian.....	1,729	1,915	204	492
Scotch.....	1,277	1,627	196	172
Slovak.....	51	32	11	2
Spanish.....	698	1,009	255	189
Spanish-American.....	192	319	44	30
Syrian.....	72	120	17	5
Turkish.....	21	59	2	4
Welsh.....	66	104	25	21
West Indian (except Cuban).....	91	166	62	40
Other peoples.....	185	188	256	55
Not specified.....	.....	.....	1,041	956
Total.....	24,513	36,398	22,156	6,177

LIST OF EMPLOYERS WHO HAVE ESTABLISHED SOME FORM OF DISABILITY BENEFIT FUND.

A.

Acme Machinery Co., The.....	Cleveland.....	Ohio.
Adams & Westlake Co., The.....	Chicago.....	Ill.
Allburn, C. & C., Co.....	McCarr.....	Ky.
Allis-Chalmers Manufacturing Co.....	Milwaukee.....	Wis.
Alpha Portland Cement Co.....	Easton.....	Pa.
American Engineering Co.....	Philadelphia.....	Pa.
American Hard Rubber Co.....	New York.....	N. Y.
American Iron & Steel Manufacturing Co.....	Lebanon.....	Pa.
American-LaFrance Fire Engine Co.....	Elmira.....	N. Y.
American Manganese Steel Co.....	Chicago Heights.....	Ill.
American Rolling Mill Co.....	Middletown.....	Ohio.
American Rubber Co.....	Cambridge.....	Mass.
American Sales Book Co.....	Niagara Falls.....	N. Y.
American Seeding Machine Co., The.....	Richmond.....	Ind.
American Steel Foundries.....	Chicago.....	Ill.
American Tool Co.....	Boston.....	Mass.
Anderson Electric Car Co.....	Detroit.....	Mich.
Ann Arbor R. R. Co., The.....	Toledo.....	Ohio.
Armour & Co.....	Chicago.....	Ill.
Armstrong Cork Co.....	Pittsburgh.....	Pa.
Ashcroft Manufacturing Co., The.....	Bridgeport.....	Conn.
Ashland Iron & Mining Co.....	Ashland.....	Ky.
Atlantic Coast Line R. R. Co., The.....	Wilmington.....	N. C.
Atlas Portland Cement Co., The.....	Northampton.....	Pa.
Autocar Co., The.....	Ardmore.....	Pa.
Avery Co., The.....	Peoria.....	Ill.

B.

Baker-Vawter Co.....	Benton Harbor.....	Mich.
Ballard & Ballard Co.....	Louisville.....	Ky.
Ballou, B. A., & Co. (Inc.).....	Providence.....	R. I.
Baltimore & Ohio R. R. Co., The.....	Baltimore.....	Md.
Barber-Colman Co.....	Rockford.....	Ill.
Barbour-Stockwell Co.....	Cambridge.....	Mass.
Barrett Leather Co.....	Little Falls.....	N. Y.
Bausch & Lomb Optical Co.....	Rochester.....	N. Y.
Beckwith, P. D., Estate of (Inc.).....	Dowagiac.....	Mich.
Benjamin-Washington Co., Alfred (Inc.).....	New York.....	N. Y.
Berger Manufacturing Co., The.....	Canton.....	Ohio.
Bernstein Manufacturing Co.....	Philadelphia.....	Pa.
Berwick & Smith Co.....	Norwood.....	Mass.
Bethlehem Steel Co.....	Bethlehem.....	Pa.
Billings & Spencer Co., The.....	Hartford.....	Conn.
Bird & Son.....	East Walpole.....	Mass.
Bishop-Babcock-Becker Co.....	Cleveland.....	Ohio.

Bisler, G. A. (Inc.)	Philadelphia	Pa.
Blair, J. C., Co.	Huntington	Pa.
Blake & Knowles Steam Pump Works	Cambridge	Mass.
Bliss, E. W., Co.	Brooklyn	N. Y.
Bloomington Bros.	New York	N. Y.
Blount Plow Works, The	Evansville	Ind.
Boston Elevated Ry. Co.	Boston	Mass.
Bowser, S. F., & Co.	Fort Wayne	Ind.
Bridgeport Brass Co.	Bridgeport	Conn.
Briggs, D. F., Co.	Attleboro	Mass.
Brill, J. G., Co.	Philadelphia	Pa.
Bristol-Myers Co.	Brooklyn	N. Y.
Brooklyn Rapid Transit Co.	Brooklyn	N. Y.
Brown Hoisting Machinery Co.	Cleveland	Ohio.
Brown & Sharpe Manufacturing Co.	Providence	R. I.
Buckeye Engine Co.	Salem	Ohio.
Buckeye Iron & Brass Works	Dayton	Ohio.
Buckstaff Co.	Oshkosh	Wis.
Buda Co., The	Harvey	Ill.
Buffalo Forge Co.	Buffalo	N. Y.
Buffalo Gasoline Motor Car Co.	Buffalo	N. Y.
Builders Iron Foundry	Providence	R. I.
Bullard Machine Tool Co.	Bridgeport	Conn.
Burk Bros. (Inc.)	Philadelphia	Pa.
Burroughs Adding Machine Co.	Detroit	Mich.
Burt, F. N., Co. (Ltd.)	Buffalo	N. Y.

C.

C. & C. Electric Manufacturing Co.	Garwood	N. J.
Cadillac Motor Car Co., The	Detroit	Mich.
Calumet & Hecla Mining Co.	Calumet	Mich.
Calvert Lithographing Co.	Detroit	Mich.
Cambria Steel Co., The	Johnstown	Pa.
Canton Stamping & Enameling Co., The	Canton	Ohio.
Carbon Hill Coal Co., The	Carbonado	Wash.
Carborundum Co., The	Niagara Falls	N. Y.
Carnegie Steel Co.	Pittsburgh	Pa.
Carpenter Steel Co., The	Reading	Pa.
Cedar Hill Coal & Coke Co., The	Denver	Colo.
Celfor Tool Co., The	Buchanan	Mich.
Celluloid Co., The	Newark	N. J.
Challenge Cutlery Corporation, The	Bridgeport	Conn.
Challenge Machinery Co., The	Grand Haven	Mich.
Champion Copper Co., The	Painesdale	Mich.
Chase, J. I., Plow Works	Racine	Wis.
Cheney Bros.	South Manchester	Conn.
Chesapeake & Ohio Railway Co.	Richmond	Va.
Chicago, Burlington & Quincy Railroad Co.	Chicago	Ill.
Chicago City Railway Co.	Chicago	Ill.
Chicago, Milwaukee & St. Paul Railway Co.	Seattle	Wash.
Chicago Pneumatic Tool Co.	New York	N. Y.
Chicago Steel Foundry Co.	Chicago	Ill.
Chicago Wheel Manufacturing Co.	Chicago	Ill.
Churchill & Olden Co.	Brockton	Mass.
Clark Textile Co.	Saratoga Springs	N. Y.

Clark Thread Co., The.....	Newark.....	N. J.
Cleveland Automatic Machine Co.....	Cleveland.....	Ohio.
Cleveland-Cliffs Iron Co., The.....	Ishpeming.....	Mich.
Cleveland Twist Drill Co.....	Cleveland.....	Ohio.
Coal & Coke Railway Co.....	Elkins.....	W. Va.
Collins, A. M., Manufacturing Co.....	Philadelphia.....	Pa.
Colorado & Southern Railway Co., The.....	Denver.....	Colo.
Computing Scale Co.....	Dayton.....	Ohio.
Conkling-Armstrong Terra Cotta Co.....	Philadelphia.....	Pa.
Connersville Blower Co.....	Connersville.....	Ind.
Consolidated Gas Co. of N. Y.....	New York.....	N. Y.
Continental Coal Corporation.....	Wallsend.....	Ky.
Continental Gin Co.....	Birmingham.....	Ala.
Cooper, C. & G. Co., The.....	Mount Vernon.....	Ohio.
Copper Queen Consolidated Mining Co.....	Bisbee.....	Ariz.
Cousins, J. & T., & Co.....	Brooklyn.....	N. Y.
Cramp, Wm., & Sons, Ship & Engine Building Co.....	Philadelphia.....	Pa.
Crawford, McGregor & Canby Co., The.....	Dayton.....	Ohio.
Crocker-Wheeler Beneficial Association, The.....	Ampere.....	N. J.
Crouse-Hinds Co.....	Syracuse.....	N. Y.
Curtis Lumber & Millwork Co.....	Clinton.....	Iowa.

D.

Dain Manufacturing Co.....	Ottumwa.....	Iowa.
Davidson Bros. Co.....	Sioux City.....	Iowa.
Dayton Manufacturing Co., The.....	Dayton.....	Ohio.
Deming Co.....	Salem.....	Ohio.
Deere & Co.....	Moline.....	Ill.
Deere & Mansure Co.....	Moline.....	Ill.
Dennison Manufacturing Co.....	South Framingham.....	Mass.
Denny-Renton Clay & Coal Co.....	Renton.....	Wash.
Denver Tramway Co., The.....	Denver.....	Colo.
Detrick & Harvey Machine Co.....	Baltimore.....	Md.
Dold, Jacob, Packing Co.....	Buffalo.....	N. Y.
Donnelly, R. R., & Sons Co.....	Chicago.....	Ill.
Donohoe Coke Co.....	Greenwald.....	Pa.
Draper Co.....	Hopedale.....	Mass.
Dunn & McCarthy.....	Auburn.....	N. Y.

E.

Eastern Malleable Iron Co., The.....	Bridgeport.....	Conn.
Edison, Thomas A. (Inc.).....	Orange.....	N. J.
Eisenlohr, Otto, & Bros. (Inc.).....	Boyertown.....	Pa.
Emerson-Brantingham Co.....	Rockford.....	Ill.
Empire Steel & Iron Co.....	Catasauqua.....	Pa.
Excelsior Needle Co.....	Torrington.....	Conn.

F.

Faber, Eberhard, Pencil Co.....	Brooklyn.....	N. Y.
Farley & Loetscher Manufacturing Co., The.....	Dubuque.....	Iowa.
Farquhar, A. B., Co. (Ltd.).....	York.....	Pa.
Farr Alpaca Co.....	Holyoke.....	Mass.
Fels & Co.....	Philadelphia.....	Pa.
Felt & Tarrant Manufacturing Co.....	Chicago.....	Ill.
Filene's, William, Sons Co.....	Boston.....	Mass.

Firth & Foster Co.....	Philadelphia.....	Pa.
Fisk Rubber Co., The.....	Chicopee Falls.....	Mass.
Flint & Walling Manufacturing Co.....	Kendallville.....	Ind.
Foerderer, Robert H. (Inc.).....	Philadelphia.....	Pa.
Foot, Schulze & Co.....	St. Paul.....	Minn.
Forbes Lithograph Manufacturing Co., The.....	Boston.....	Mass.
Fore River Shipbuilding Corporation.....	Quincy.....	Mass.
Fork Ridge Coal & Coke Co.....	Fork Ridge.....	Tenn.
Fort Wayne Electric Works.....	Fort Wayne.....	Ind.
Fox Bakery, General Baking Co.....	Boston.....	Mass.
Fox, Charles K. (Inc.).....	Haverhill.....	Mass.
Franklin, H. H., Manufacturing Co.....	Syracuse.....	N. Y.
French & Hecht.....	Davenport.....	Iowa.
Frick Co., The.....	Waynesboro.....	Pa.
Fulton Bag & Cotton Mills.....	Atlanta.....	Ga.

G.

Gamewell Fire Alarm Telegraph Co., The.....	Newton Upper Falls.....	Mass.
Garvin Machine Co.....	New York.....	N. Y.
General Chemical Co.....	New York.....	N. Y.
General Electric Co.....	Schenectady.....	N. Y.
General Fire Extinguisher Co.....	Providence.....	R. I.
Gibson, William D., Co., The.....	Chicago.....	Ill.
Ginn & Co.....	Boston.....	Mass.
Globe-Wernicke Co., The.....	Cincinnati.....	Ohio.
Goodman Manufacturing Co.....	Chicago.....	Ill.
Goodrich, B. F., Co., The.....	Akron.....	Ohio.
Goodyear Tire and Rubber Co., The.....	Akron.....	Ohio.
Gorham Manufacturing Co.....	Providence.....	R. I.
Grand Rapids Railway Co.....	Grand Rapids.....	Mich.
Grand Rapids Refrigerator Co.....	Grand Rapids.....	Mich.
Grand Rapids Show Case Co.....	Grand Rapids.....	Mich.
Grand Trunk Railway Co.....	Montreal.....	Can.
Graton & Knight Manufacturing Co., The.....	Worcester.....	Mass.
Gurley, W. & L. E.....	Troy.....	N. Y.
Gutta Percha & Rubber Manufacturing Co.....	New York.....	N. Y.

H.

Haines, Jones & Cadbury Co.....	Philadelphia.....	Pa.
Hale & Kilburn Co.....	Philadelphia.....	Pa.
Hall & Brown Wood Working Machine Co.....	St. Louis.....	Mo.
Hardwicke, A. H. G., Employees' Association.....	Niagara Falls.....	N. Y.
Harned & Von Maur's.....	Davenport.....	Iowa.
Harrisburg Foundry & Machine Works.....	Harrisburg.....	Pa.
Hazel-Atlas Glass Co.....	Wheeling.....	W. Va.
Heald Machine Co., The.....	Worcester.....	Mass.
Heaps Coal Co.....	Boone.....	Iowa.
Heller Bros. Co.....	Newark.....	N. J.
Hendey Machine Co., The.....	Torrington.....	Conn.
Hendrie & Bolthoff Manufacturing & Supply Co.....	Denver.....	Colo.
Hill Publishing Co.....	New York.....	N. Y.
Homestake Mining Co.....	Lead.....	S. Dak.
Hubbard, Eldridge & Miller.....	Rochester.....	N. Y.
Huber Manufacturing Co.....	Marion.....	Ohio.
Hutting Sash & Door Co.....	St. Louis.....	Mo.

Huyck, F. C., & Sons.....	Albany.....	N. Y.
Hyatt Roller Bearing Co.....	Harrison.....	N. J.
Hydraulic Power Co., and Cliff Electric Distributing Co.....	Niagara Falls.....	N. Y.

I.

Industrial Works.....	Bay City.....	Mich.
Ingersoll-Rand Co.....	New York.....	N. Y.
Interborough Rapid Transit Co.....	New York.....	N. Y.
Interior Hardwood Co.....	Indianapolis.....	Ind.
International Harvester Co.....	Chicago.....	Ill.
International Time Recording Co.....	Endicott.....	N. Y.
Iowa Dairy Separator Co.....	Waterloo.....	Iowa.
Iron City Sanitary Manufacturing Co.....	Zelionople.....	Pa.
Irons & Russell Co.....	Providence.....	R. I.
Isle Royale Cooper Co.....	Houghton.....	Mich.

J.

Jackson Automobile Co.....	Jackson.....	Mich.
Jamestown Worsted Mills.....	Jamestown.....	N. Y.
Jeffrey Manufacturing Co.....	Columbus.....	Ohio.
Joseph & Feiss Co., The.....	Cleveland.....	Ohio.

K.

Kansas City Southern Railway Co., The.....	Kansas City.....	Mo.
Kayser, Julius, & Co.....	Brooklyn.....	N. Y.
Keeler, E., Co., The.....	Williamsport.....	Pa.
Kelly Springfield Motor Truck Co., The.....	Springfield.....	Ohio.
Ketterlinus Litho Manufacturing Co.....	Philadelphia.....	Pa.
Keuffel & Esser Co.....	Hoboken.....	N. J.
Keystone Driller Co., The.....	Beaver Falls.....	Pa.
Killian Co., The.....	Cedar Rapids.....	Iowa.
Kimball, W. W., Co.....	Chicago.....	Ill.
Kingan & Co. (Ltd.).....	Indianapolis.....	Ind.
Kirk Latty Mfg. Co.....	Cleveland.....	Ohio.
Kohler & Campbell.....	New York.....	N. Y.
Krakauer Bros.....	New York.....	N. Y.
Krueger, Gottfried, K. U. V.....	Newark.....	N. J.

L.

Laidlaw-Dunn-Gordon Co.....	Cincinnati.....	Ohio.
Lansing Co.....	Lansing.....	Mich.
Larkin Co., The.....	Buffalo.....	N. Y.
Larnde, Carter & Co.....	Detroit.....	Mich.
Leans, Roderick, Manufacturing Co.....	Mansfield.....	Ohio.
Leffel, James, Co., The.....	Springfield.....	Ohio.
Lehigh Coal & Navigation Co., The.....	Philadelphia.....	Pa.
Lester Piano Co., The.....	Philadelphia.....	Pa.
Libby, McNeil & Libby.....	Chicago.....	Ill.
Library Bureau.....	Cambridge.....	Mass.
Lieber, H., Co., The.....	Indianapolis.....	Ind.
Lindsey Wire Weaving Co., The.....	Cleveland.....	Ohio.
Link Belt Co., The.....	Chicago.....	Ill.
Locomobile Co.....	Bridgeport.....	Conn.
Lodge & Shipley Machine Tool Co.....	Cincinnati.....	Ohio.

130 MONTHLY REVIEW OF THE BUREAU OF LABOR STATISTICS.

Long Island Railroad Co., The.....	New York.....	N. Y.
Lord & Taylor.....	New York.....	N. Y.
Louisville Railway Co.....	Louisville.....	Ky.
Lovell, McConnell Manufacturing Co.....	Newark.....	N. J.
Lowe Bros. Co.....	Dayton.....	Ohio.
Lukenheimer Co., The.....	Cincinnati.....	Ohio.
Lukens Iron & Steel Co., The.....	Coatesville.....	Pa.

M.

Maddock's, Thomas, Sons Co.....	Trenton.....	N. J.
Majestic Manufacturing Co.....	St. Louis.....	Mo.
Manning, Maxwell & Moore.....	New York.....	N. Y.
Marion Steam Shovel Co., The.....	Marion.....	Ohio.
Massey Harris Co.....	Toronto.....	Can.
Maytag Co., The.....	Newton.....	Iowa.
McCallum Hosiery Co.....	Northampton.....	Mass.
McClary Manufacturing Co., The.....	London, Ont.....	Can.
McCray Refrigerator Co.....	Kendallville.....	Ind.
McKesson & Robbins.....	New York.....	N. Y.
Mellin's Food Co.....	Boston.....	Mass.
Mercer Iron & Coal Co.....	Stoneboro.....	Pa.
Mergott, J. E., Co., The.....	Newark.....	N. J.
Merrow Machine Co., The.....	Hartford.....	Conn.
Meyers, Fred J., Manufacturing Co.....	Hamilton.....	Ohio.
Michaels Stern & Co.....	Rochester.....	N. Y.
Michigan Bolt & Nut Works, The.....	Detroit.....	Mich.
Midvale Steel Co., The.....	Philadelphia.....	Pa.
Miehle Printing Press & Manufacturing Co.....	Chicago.....	Ill.
Mietz & Weiss Machine Shop & Iron Foundry, The.....	New York.....	N. Y.
Milburn Wagon Co., The.....	Toledo.....	Ohio.
Miles, Dr., Medical Co.....	Elkhart.....	Ind.
Miller, Edward, & Co.....	Meriden.....	Conn.
Miner-Hillard Milling Co.....	Wilkes-Barre.....	Pa.
Mishawaka Woolen Manufacturing Co., The.....	Mishawaka.....	Ind.
Montgomery Ward & Co.....	Chicago.....	Ill.
Monument Pottery Co.....	Trenton.....	N. J.
Morris Machine Works.....	Baldwinsville.....	N. Y.
Morris, Phillip & Co. (Ltd.).....	New York.....	N. Y.
Morton Manufacturing Co.....	Muskegon Heights.....	Mich.

N.

Narragansett Machine Co.....	Providence.....	R. I.
National Cash Register Co.....	Dayton.....	Ohio.
National Meter Co.....	New York.....	N. Y.
National Tube Co.....	Pittsburgh.....	Pa.
Nelson Matter Furniture Co.....	Grand Rapids.....	Mich.
Nettleton, A. E., Co.....	Syracuse.....	N. Y.
Nevada, California & Oregon Ry.....	Reno.....	Nev.
New England Confectionery Co.....	Boston.....	Mass.
New England Structural Co.....	Everett.....	Mass.
New Haven Clock Co.....	New Haven.....	Conn.
New Process Gear Corporation.....	Syracuse.....	N. Y.
Newton Machine Tool Works (Inc.).....	Philadelphia.....	Pa.
Niagara Falls Power Co.....	Niagara Falls.....	N. Y.

Nordyke & Marmon Co.....	Indianapolis.....	Ind.
Northwestern Knitting Co.....	Minneapolis.....	Minn.
Norton Iron Works.....	Ashland.....	Ky.

O.

Oakville Co.....	Waterbury.....	Conn.
Ohio Brass Co., The.....	Mansfield.....	Ohio.
Ohio Electric Railway Co., The.....	Springfield.....	Ohio.
Ohio Valley Pulley Works, The.....	Maysville.....	Ky.
Ohio & Colorado Smelting & Refining Co.....	Salida.....	Colo.
Okonite Co., The.....	New York.....	N. Y.
Oneida Community, Ltd.....	Oneida.....	N. Y.
Oneida Steel Pulley Co.....	Oneida.....	N. Y.
Onondaga Pottery Co.....	Syracuse.....	N. Y.
Ontario Silver Co., The.....	Muncie.....	Ind.
Osceola Consolidated Mining Co., The.....	Osceola.....	Mich.
Oshkosh Employees Benefit Association, The.....	Oshkosh.....	Wis.

P.

Pacific Coast Co.....	Seattle.....	Wash.
Parlin & Orendorff Co.....	Canton.....	Ill.
Parry Manufacturing Co.....	Indianapolis.....	Ind.
Pass & Seymour (Inc.).....	Solvay.....	N. Y.
Paulle, L. Co.....	Minneapolis.....	Minn.
Peck Brothers & Co.....	New Haven.....	Conn.
Peerless Rubber Co.....	New York.....	N. Y.
Penn Hardware Co., The.....	Reading.....	Pa.
Pennsylvania Railroad Voluntary Relief Association (East of Pittsburgh).....	Philadelphia.....	Pa.
Pennsylvania Railroad Voluntary Relief Association (West of Pittsburgh).....	Cleveland.....	Ohio.
Peoples Gas Light & Coke Co.....	Chicago.....	Ill.
Petroleum Iron Works, The.....	Sharon.....	Pa.
Philadelphia Electric Co.....	Philadelphia.....	Pa.
Philadelphia & Reading Railway Co.....	Philadelphia.....	Pa.
Pierce Arrow Motor Car Co., The.....	Buffalo.....	N. Y.
Piqua Handle & Manufacturing Co., The.....	Piqua.....	Ohio.
Pittsburgh Coal Co.....	Pittsburgh.....	Pa.
Plant, Thomas G. Co.....	Boston.....	Mass.
Plymouth Cordage Co.....	Plymouth.....	Mass.
Porter, H. K. Co.....	Pittsburgh.....	Pa.
Potter, Thomas Sons & Co. (Inc.).....	Philadelphia.....	Pa.
Potter & Johnston.....	Pawtucket.....	R. I.
Pratt Cady Co., Inc.....	Hartford.....	Conn.
Pratt & Whitney Co.....	Hartford.....	Conn.
Proctor & Gamble Co., The.....	Cincinnati.....	Ohio.
Proximity Manufacturing Co.....	Greensboro.....	N. C.
Public Service Corporation of New Jersey.....	Newark.....	N. J.
Puget Sound Traction & Power Co.....	Seattle.....	Wash.
Pullman Co., The.....	Chicago.....	Ill.

R.

Reading Rubber Manufacturing Co.....	Reading.....	Mass.
Reed Manufacturing Co.....	Erie.....	Pa.
Regal Shoe Co.....	Boston.....	Mass.
Regina Co., The.....	Rahway.....	N. J.

Remington Arms-Union Metallic Cartridge Co.	New York	N. Y.
Republic Iron & Steel Co.	Duluth	Minn.
Republic Iron & Steel Co.	Youngstown	Ohio.
Rich, W. & Bros. Co.	Atlanta	Ga.
Richard & Boynton Co.	Dover	N. J.
Riverside Portland Cement Co.	Riverside	Cal.
Robbins & Myers Co., The	Springfield	Ohio.
Rogers Peet Co.	New York	N. Y.
Rome Brass & Copper Co.	Rome	N. Y.
Root, A. I. Co.	Medina	Ohio.
Rossi Saddlery Co.	St. Joseph	Mo.
Royal Furniture Co.	Grand Rapids	Mich.
Rueckheim Bros. & Eckstein	Chicago	Ill.
Rumford Chemical Works	Providence	R. I.
Russell & Erwin Manufacturing Co.	New Britain	Conn

S.

Saco Lowell Shops	Boston	Mass.
Samson & Sessions Co.	Cleveland	Ohio.
Scranton Forging Co.	Scranton	Pa.
Seagrave Co., The	Columbus	Ohio.
Sears, Roebuck & Co.	Chicago	Ill.
Seneca Falls Manufacturing Co., The	Seneca Falls	N. Y.
Sharon Steel Hoop Co.	Sharon	Pa.
Sheldon Axle & Spring Co.	Wilkes-Barre	Pa.
Shenango Furnace Co., The	Duluth	Minn.
Sherwin-Williams Co., The	Cleveland	Ohio.
Shimer, Samuel J., Sons	Milton	Pa.
Simmons, R. F., Co.	Attleboro	Mass.
Simonds Manufacturing Co.	Fitchburg	Mass.
Simon, R. & H., Co.	Union Hill	N. J.
Skinner Engine Co.	Erie	Pa.
Sloss Sheffield Steel & Iron Co.	Birmingham	Ala.
Smith, The A. O., Co.	Milwaukee	Wis.
Smith, S. Morgan, Co.	York	Pa.
Smith & Wesson	Springfield	Mass.
Solvay Process Co.	Syracuse	N. Y.
Southern Pacific Co.	New York	N. Y.
Southern Railway Co.	Washington	D. C.
Splitdorf Electrical Co.	Newark	N. J.
St. Joseph & Grand Island Railway Co., The	St. Joseph	Mo.
St. Louis & San Francisco Railroad	St. Louis	Mo.
St. Louis, San Francisco & Texas Railway; Fort Worth & Rio Grande Railway; Brownwood, North & South Railway	Fort Worth	Tex.
St. Marys Wheel & Spoke Co.	St. Marys	Ohio.
Stag Canon Fuel Co.	Dawson	N. Mex.
Standard Co., The	Geneva	N. Y.
Standard Paint Co., The	Boundbrook	N. J.
Standard Paint Co., The	New York	N. Y.
Standard Roller Bearing Co.	Philadelphia	Pa.
Standard Welding Co., The	Cleveland	Ohio.
Stanley Rule & Level Co., The	New Britain	Conn.
Stanley Works, The	New Britain	Conn.

Starrett, L. S., Co., The.....	Athol.....	Mass.
Steinway & Sons.....	New York.....	N. Y.
Stetson Shoe Co.....	South Weymouth.....	Mass.
Stokes & Smith Co.....	Philadelphia.....	Pa.
Strauch Bros.....	New York.....	N. Y.
Surpass Leather Co.....	New York.....	N. Y.
Susquehanna Coal Co.....	Philadelphia.....	Pa.
Susquehanna Silk Mills.....	Sunbury.....	Pa.
Swett, A. S., Iron Works.....	Medina.....	N. Y.
Swift & Co.,.....	Chicago.....	Ill.
Sybold Machine Co., The.....	Dayton.....	Ohio.
Syracuse Chilled Plow Co.....	Syracuse.....	N. Y.

T.

Tabor Manufacturing Co.....	Philadelphia.....	Pa.
Taft & Pennoyer Co.....	Oakland.....	Cal.
Transue & Williams Co., The.....	Alliance.....	Ohio.
Traut & Hine Manufacturing Co.....	New Britain.....	Conn.
Triumph Electric Co.....	Cincinnati.....	Ohio.
Trumbull Electric Manufacturing Co., The.....	Plainville.....	Conn.
Tubular Rivet Co.....	Quincy.....	Mass.
Tufts, Nathaniel, Meter Co.....	Boston.....	Mass.

U.

Underwood Typewriter Co.....	Hartford.....	Conn.
Union Drawn Steel Co.....	Beaver Falls.....	Pa.
Union Pacific System.....	Omaha.....	Nebr.
Union Switch & Signal Co., The.....	Swissvale.....	Pa.
United States Glass Co.....	Pittsburgh.....	Pa.
United States Headlight Co.....	Buffalo.....	N. Y.
United States Steel Co.....	Canton.....	Ohio.
Universal Winding Co.....	Providence.....	R. I.

V.

Venango Manufacturing Co., The.....	Franklin.....	Pa.
Victor Talking Machine Co.....	Camden.....	N. J.
Vilter Manufacturing Co.....	Milwaukee.....	Wis.
Vulcan Iron Works.....	Wilkes-Barre.....	Pa.
Vulcan Plow Co., The.....	Evansville.....	Ind.
Vulcanite Portland Cement Co.....	Phillipsburg.....	N. J.

W.

Wadsworth Watch Case Co.....	Dayton.....	Ky.
Walden Knife Co.....	Walden.....	N. Y.
Walworth Manufacturing Co.....	Boston.....	Mass.
Warner & Swasey Co., The.....	Cleveland.....	Ohio.
Washington Railway & Electric Co.....	Washington.....	D. C.
Washington Terminal Co.....	Washington.....	D. C.
Washington Water Power Co., The.....	Spokane.....	Wash.
Waterbury Clock Co.....	Waterbury.....	Conn.
Wayne Knitting Mills.....	Fort Wayne.....	Ind.
Weaver Organ & Piano Co.....	York.....	Pa.
Wellman-Seaver-Morgan Co., The.....	Cleveland.....	Ohio.
Wells Bros. Co.....	Greenfield.....	Mass.
Welsbach Co., The.....	Gloucester.....	N. J.
Werner Co.....	Akron.....	Ohio.

Western Electric Co.....	Chicago.....	Ill.
Western Maryland Railway Co.....	Baltimore.....	Md.
Western Union Telegraph Co., The.....	New York.....	N. Y.
Westinghouse Air Brake Co., The.....	Wilmerding.....	Pa.
Westinghouse Electric & Manufacturing Co.....	East Pittsburgh.....	Pa.
Westinghouse Machine Co., The.....	East Pittsburgh.....	Pa.
White Sewing Machine Co.....	Cleveland.....	Ohio.
Whitney Manufacturing Co.....	Hartford.....	Conn.
Widdicomb Furniture Co., The.....	Grand Rapids.....	Mich.
Wilcox & White Co.....	Meriden.....	Conn.
Wiley & Russell Manufacturing Co.....	Greenfield.....	Mass.
Will & Baumer Co.....	Syracuse.....	N. Y.
Williams, I. B. & Sons.....	Dover.....	N. H.
Williams & White Co.....	Moline.....	Ill.
Winslow Bros. Co.....	Chicago.....	Ill.
Wood, S. A. Machine Co.....	Boston.....	Mass.
Woolf & Shulhof.....	New York.....	N. Y.

Y.

Yale Brewing Co., The.....	New Haven.....	Conn.
Yale & Towne Manufacturing Co., The.....	Stamford.....	Conn.
York, J. W. & Sons.....	Grand Rapids.....	Mich.
York Manufacturing Co.....	York.....	Pa.
York Safe & Lock Co.....	York.....	Pa.
Youngstown Sheet & Tube Co.....	Youngstown.....	Ohio.

Z.

Zions Cooperative Mercantile Institution.....	Salt Lake City.....	Utah.
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OFFICIAL PUBLICATIONS RELATING TO LABOR.

UNITED STATES.

CALIFORNIA.—*Industrial Accident Commission. Boiler safety orders, effective January 1, 1917. [Sacramento], 1916. 147 pp.*

These are the commission's orders, prepared under authority of the workmen's compensation insurance and safety act. The orders are the result of consultation with general safety orders committees organized in San Francisco and Los Angeles and representing employers and employees who would be affected by the application of the orders.

— — — *Bulletin No. 2, relating to safety and efficiency in mines, May, 1916. [Sacramento], 1916. 15 [1] pp.*

One of a series of bulletins which will discuss the causes and prevention of accidents in connection with some particular phase of mining.

ILLINOIS.—*Industrial Board. Third annual report for the year ending June 30, 1916. Springfield, 1916. 69 pp.*

Reports the operation of the workmen's compensation law, giving statistical data concerning 16,869 accidents (closed cases) filed by 5,670 employers during the calendar year ending December 31, 1915. There were 125 fatal-accident cases disposed of by the board. Compensation amounting to \$1,075,287 and medical expenses amounting to \$217,448 were paid in the 16,869 cases. A more complete digest of this report will appear in a future issue of the REVIEW.

MASSACHUSETTS.—*State Board of Labor and Industries. Suggestions to employers and employees for the protection of eyes and the prevention of accidents. Boston, 1916. 10 pp. (Industrial Bulletin No. 5.)*

— — — *Rules and regulations suggested for the prevention of anthrax. Boston, 1916. 10 pp. (Industrial Bulletin No. 6.)*

— — — *Rules and regulations governing compressed-air work. Boston, 1916. 12 pp. (Industrial Bulletin No. 7.)*

— — — *Third annual report, January, 1916. Boston, 1916. 140 pp.*

MICHIGAN. MARQUETTE COUNTY.—*Inspector of Mines. The annual report of inspector of mines for the year ending September 30, 1916. 18 pp.*

Contains a descriptive account of 12 fatal accidents occurring in the mines of Marquette County, and also notes the occurrence of 226 serious accidents and 539 slight injuries. These accidents are classified by causes. The following summary table is submitted:

Total number of mines in operation.....	33
Total number of quarries.....	6
Total number of men employed underground.....	3,332
Total number of men employed on surface.....	1,578
Total number of men employed in quarries.....	135
Total number of men employed in and about the mining industry.....	5,045
Total number of fatal accidents.....	13
Total number of fatal accidents per thousand men underground.....	3.3
Total number of fatal accidents per thousand men on surface.....	1.27
Total number of fatal accidents per thousand men engaged in the mining industry.....	2.58

NEW YORK.—*State Department of Labor. The labor law and the industrial code with amendments, additions, and annotations to July 1, 1916. Prepared by the Bureau of Statistics and Information. Albany, 1916. 258 pp.*

This volume, printed in advance from the annual report of the Department of Labor for 1916, gives the text of the general labor law (ch. 31, Consolidated Laws) and of the Industrial Code (comprising rules and regulations supplementary to the labor law) and the penal provisions relating thereto. A full index appears at the end of the volume. In notes are given cross references to laws and to court decisions or opinions of the Attorney General construing the laws.

— *State Industrial Commission. Monthly bulletin. Albany, October, 1916.*

Current reports on the work of the Commission, rulings under the State industrial code, operations of the State fund, legal decisions under the compensation act, work of the Bureau of Mediation and Arbitration, and review of the labor market. Outlines the work of the first State safety congress, which will be held under the auspices of the commission at Syracuse on December 11, 12, 13, and 14.

— *University of the State of New York. Division of agricultural and industrial education. Vocational training of girls in the State of New York, by Anna C. Hedges, State specialist in vocational education of girls. Albany, 1915. 41 pp. Plates. (Bulletin No. 612, Apr. 1, 1916.)*

RHODE ISLAND.—*Twenty-ninth annual report of the commissioner of industrial statistics. Providence, 1916. 108 pp.*

Reports the activities of the commissioner of industrial statistics largely in connection with duties involving the State workmen's compensation act; the compilation of a card index on the rates of wages in the industries of the State; in recording strikes; in assisting the unemployed to obtain work and in furnishing general statistical information pertaining to the State. The tables on rates of wages show a material increase in rates and a reduction in hours of labor in many occupations particularly where women are employed. The tables on workmen's compensation show that 2,330 establishments are under the act, a gain of 113 over the preceding year. The average number of wage earners under the act in 1915 was 154,538, a gain of 2,133 over the number employed in 1914. There were 11,611 accidents in establishments under the act, and 31 deaths; a total of \$216,372.20 was paid out on account of accidents and deaths. A digest of this report will appear in a future issue of the REVIEW.

TENNESSEE.—*Department of workshop and factory inspection. Third annual report for the fiscal year beginning December 1, 1914, and ending December 1, 1915. Nashville [1916]. v., 75 pp.*

This report declares that there has been a general awakening of public interest in working conditions in industry, as manifested through civic organizations, boards of trade, chambers of commerce, manufacturers' associations, and women's clubs. "And this awakened public conscience has been in a large measure brought about by the activity and interest exercised by organized labor in this State." In the course of the year the inspector discovered 99 child workers illegally employed; in 65 instances minors between 14 and 16 were employed without affidavits or certificates, and in 34 cases were under age (14 years).

The following table is compiled from the recapitulatory statement of the report:

WORK OF TENNESSEE DEPARTMENT OF WORKSHOP AND FACTORY INSPECTION
FOR THE THREE FISCAL YEARS ENDING DECEMBER 1, 1915.

Year ending Dec. 1—	Inspections made.		Court cases disposed of.	Minors 14 to 16 found working without proper affidavits.	Minors under 14 dismissed from service.	Accidents reported.	
	Regular.	Special.				Nonfatal.	Fatal.
1913.....	1,487	180	9	483	94	14	1
1914.....	825	970	11	178	69	421	7
1915.....	934	1,352	21	65	34	434	14
Total.....	3,246	2,502	41	726	197	869	22

UNITED STATES.—*Bureau of Mines. The nitration of toluene, by E. J. Hoffman. Washington, 1916. 32 pp. (Technical Paper 146.)*

— *Children's Bureau. A tabular statement of infant welfare work by public and private agencies in the United States, by Etta R. Goodwin. Washington, 1916. 114 pp. (Infant mortality series No. 5; Bureau publication No. 16.)*

The report represents an effort to outline the extent of the work carried on in the United States for the reduction of infant mortality. It presents for each State and for each city of 10,000 population and over, according to the census of 1910, a statement of the civic measures for the reduction of the infant death rate, and indicates the infant-welfare work by private agencies in these cities and characteristic work in some smaller communities. Full descriptions of the methods used by both public and private agencies will be furnished in another report now in preparation.

In collecting the information, schedules or inquiries were sent out early in 1915. These were addressed to the State health officers in all States, to the secretaries of all State colleges and universities, to health officers in cities of 10,000 population and over, and to private agencies. In this initial report a complete and original census of all phases of infant-welfare work by private agencies was not regarded as practicable. The choice of agencies addressed is the result of the investigations of individuals and agencies in close touch with infant-welfare activities in all sections of the country.

— *Department of Agriculture. The normal day's work of farm implements, workmen, and crews in western New York. Washington, 1916. 16 pp. (Bulletin No. 412.)*

This bulletin is an attempt to analyze, on the basis of the experience of several hundred practical farmers in western New York, what should constitute a standard production or unit in the way of labor performed in the different operations of farming. The results are the average of records reported to the investigator by experienced farmers as to what constitutes a day's work under their conditions of farming. It is not a study of the question of hours of labor.

— *Department of Commerce. Bureau of the Census. Mortality statistics, 1914: Fifteenth annual report. Washington, 1916. 714 pp.*

This report is based on the transcripts from the records of the registration area, which in 1914 had an estimated population of 65,989,295, or 66.8 per cent of the total estimated population of the United States. "The number of deaths registered was 898,059, corresponding to a death rate of 13.6 per thousand of population, the lowest ever recorded for the registration area."

The passage, during 1915, of "excellent laws for the registration of births and deaths" is noted in the case of Florida and Illinois.

FOREIGN COUNTRIES.

CANADA.—*Department of Labor. Ninth report of the registrar of the board of conciliation and investigation of proceedings under the industrial disputes investigation act, 1907, for the fiscal year ending March 31, 1916. Ottawa, 1916. 204 pp. (Appendix to the annual report of the Department of Labor.) (See p. 16.)*

— *The Labor Gazette, issued by the Department of Labor by order of Parliament. Ottawa. October, 1916.*

Current reports on industrial conditions during September, proceedings under the industrial disputes investigation act, 1907, industrial disputes, wholesale and retail prices, fair wages schedules in Government contracts, legal decisions affecting labor, industrial accidents, and trade agreements. Contains special articles on employment for civic employees in eight cities in Canada, proceedings of the thirty-second annual convention of the Trades and Labor Congress of Canada, eighth annual convention of the Canadian Federation of Labor, and the eight-hour controversy on railways in the United States.

DENMARK.—*Statistiske Efterretninger udgivet af det Statistiske Departement. Copenhagen. September 23, 1916.*

Retail prices in September, 1916, savings-bank operations, 1914 to 1916, labor disputes, 1915, index number of the Economist.

FINLAND.—*Arbetsstatistisk tidsskrift utgiven af Industristyrelsen i Finland. Helsingfors. 1916, No. 4.*

Employment office reports and retail prices for current months; special articles on labor conditions in sawmills, factory inspection in 1914, federation of Finnish employers, fatigue in industry, and notes from foreign countries.

GREAT BRITAIN.—*Board of Trade. Reports to the Board of Trade by inspection officers of railway department, of inquiries into certain accidents which occurred during six months ending June 30, 1916. 8, 12, 6, 8 pp.*

Contains separate reports submitting the evidence taken by special investigators appointed to inquire into the causes of certain railway accidents occurring in the United Kingdom during the period covered by the report.

INDIA.—*Department of Mines. Report of the chief inspector of mines in India under the Indian mines act (VIII of 1901), for the year ending 31st December, 1915. Calcutta, 1916. iv, 78 pp. Folded diagram.*

ITALY.—*Bollettino della Emigrazione. Commissariato della Emigrazione. Rome, July 15, 1916. (monthly.)*

Contains statistics of Italian emigration, legislation on immigration in foreign countries, and a special article on Italian immigrants in the United States (Washington, Idaho, Oregon, and Montana).

— *Bollettino dell' Ufficio del Lavoro. Ministero per l'Industria, il Commercio e il Lavoro. Ufficio del Lavoro. Rome, September 16, 1916. (Semimonthly.)*

Current reports on the labor market, labor disputes, employers' and workmen's organizations, retail prices, court decisions affecting labor and labor legislation.

— *Ministero di Agricoltura, Industria e Commercio. Ufficio del Lavoro. Atti del consiglio superiore del lavoro. Twenty-second session, April, 1915. Rome, 1915. 335 pp. (Pubblicazione del ufficio del lavoro, Series A, No. 22.)*

Contains the minutes of the twenty-second session (April, 1915) of the superior labor council of Italy. At the session in question the council discussed legislation on industrial and agricultural employment offices, creation of a special court of arbitration (*commissione probivirale*) for labor connected with the shipping in the port of Genoa, and amendments of the laws on Sunday rest and employment of women and children.

NETHERLANDS.—*Maandschrift van het Centraal Bureau voor de Statistiek. The Hague, September, 1916.*

Current review of the industrial situation, unemployment and unemployment insurance, operations of the labor exchanges, recent strikes and lockouts, union rates of wages and hours of labor, trade-union activities, movement of whole-sale and retail prices, and emigration. Contains special articles on war emergency measures affecting labor and social conditions in general; also a review of the labor market in foreign countries.

NEW SOUTH WALES.—*Department of Labor and Industry. Report on the working of the factories and shops act, 1912, during the year 1915. Sydney, 1916. 71 pp. 3 charts.*

According to this report the number employed on November 30, 1915, in the factories of New South Wales was 99,223 persons, of whom 71 per cent were males and 29 per cent females. The number of factories on the records of the department was 7,425. Beginning with July 1, 1915, the provisions of the factories and shops act of 1912 had been extended to include the whole State. In the new area coming under the operation of the act there were 1,178 factories, employing 5,912 persons, so that 6,247 factories and 93,311 persons were in the same area as that to which the figures for 1914 applied (see MONTHLY REVIEW, Vol. II, p. 422). These figures, therefore, show an increase of 254 factories and 3,170 persons employed at the end of 1915, as compared with the figures for 1914.

Certificates of fitness and permits to work were issued to 5,756 children under 16 years of age.

There were reported 432 accidents, of which 9 were fatal.

During the year 410 informations were laid for violation of the act. Convictions were obtained in 387 cases.

NEW ZEALAND.—*Board of Trade (report of the), regarding coal prices at Auckland. Wellington, 1916. 3 pp.*

The increases in prices of coal at Auckland, New Zealand, as reported by a company handling between 60 and 70 per cent of the local trade, which took place between August 1, 1914, and May 22, 1916, are explained as due to increased cost of production, enhanced prices of materials and supplies, increase of freight rates, increased taxation, and a serious diminution of output, due to shortage of miners.

"From the evidence before us we are of the opinion that the increase in the wholesale prices of coal * * * are fully warranted, and are not more than sufficient to enable the company to produce without loss."

The report suggests that improved methods of distribution might materially lessen the burden of rising prices.

NORWAY.—*Sociale Meddelelser utgit av Departementet for Sociale Saker. Christiania, 1916, No. 4.*

Current statement of retail prices, June to August, 1916; price increases in Norway, Sweden, and Copenhagen since the outbreak of the war; industrial conditions; cooperation in Germany; and operations of the Norwegian small-holdings bank.

ONTARIO.—*The Workmen's Compensation Act (4 Geo. V, chap. 25), with amendments of 1915 and 1916 (5 Geo. V, chap. 24, 6 Geo. V, chap. 31), with regulations of board, synopsis, etc. Printed by order of the Legislative Assembly of Ontario, 1916. Toronto, 1916. 122 pp.*

Contains the text and digest of the Ontario compensation act, with regulations for its application. A detailed index is provided.

QUEENSLAND.—*The Queensland Industrial Gazette, issued by the Department of Labor. Brisbane, September, 1916. (vol. 1, no. 7.)*

Contains current reports on the labor market, awards under the conciliation and arbitration act, industrial court decisions, factory accidents, operations of employment exchanges, etc.

SWEDEN.—*Sociala Meddelanden utgivna av K. Socialstyrelsen. Stockholm, 1916. No. 8.*

Current reports on the labor market, factory inspection, operations of war emergency commissions, review of retail and wholesale prices; special articles on the proposed industrial disputes act; work of the conciliation commissioners, 1907 to 1914; social questions before the recent session of Parliament; war emergency relief by municipalities; the sickness insurance congress at Eskilstuna; housing loans to municipalities from the general pension fund. Reproduces a special royal decree granting a State subsidy to public employment offices.

— (Stockholm.) *Statistisk Månadsskrift utgiven av Stockholms stads Statistiska Kontor. Stockholm, August, 1916.*

Contains a special article on regular wage increases and special increases due to the increased cost of living arising from war conditions. Presents cost of living data by means of index numbers.

VICTORIA.—*Chief Inspector of Factories and Shops. Report for the year ended December 31, 1915. Melbourne, 1916. 171 pp.*

Presents data concerning the number of factories registered and number employed, average wages paid in trades under wage boards and in trades not under boards, overtime worked, prosecutions under the factories and shops act, accidents, and home workers.

The following table shows the number of factories registered and number employed and the number of accidents for the years 1912 to 1915:

NUMBER OF EMPLOYEES AND NUMBER OF ACCIDENTS IN REGISTERED FACTORIES IN VICTORIA, BY YEARS, 1912 TO 1915.

Year.	Number of factories registered.	Number of employees.			Accidents.		
		Male.	Female.	Total.	Total.	Number per 10,000 employees.	Fatal.
1912.....	7,750	65,491	39,255	104,746	389	37.1	.....
1913.....	8,089	69,436	41,051	110,487	407	36.8	7
1914.....	8,447	70,562	40,098	110,660	391	35.3	4
1915.....	7,486	53,370	34,590	¹ 91,888	464	50.5	8

¹ Inclusive of 3,928 persons—employers and their children—working in factories.

The above table shows a decrease during 1915 of 961 factories and 18,772 employees, explained as more apparent than real, as it is partly due to a change in the method of enumeration. It is estimated that the real decrease is 461 factories and 1,274 employees.

The number of wage boards increased from 140 in 1914 to 146 in 1915, these 146 wage boards affecting about 150,000 employees. The report shows the minimum wages fixed for each occupation by the boards.

The number of home workers registered during the year was 2,768. Of this total 1,839 worked on underclothing and dresses, 762 on clothing and shirts, 149 on knitting, and the remaining 18 on miscellaneous manufactures.

Prosecutions for violations of the factories and shops act numbered 457. Convictions were obtained in 394 cases.

In reviewing the labor market the report states that during the first half of 1915 nearly all of the manufacturing industries were adversely affected by the consequences of the drought of 1914, and in a less degree by the war. Output was limited, except of war supplies, the manufacture of which was enormously increased. Trade in the latter half of the year revived with the improvement in the seasons. The supply in skilled occupations was short, especially skilled female machine operators for military clothing.

— *Registrar of Friendly Societies. Report for the year 1915. Melbourne, [1916]. 7 pp.*

This report covers the matter of the official registration of the friendly societies, or fraternal societies as termed in the United States, building societies, provident societies (cooperative organizations, etc.), and trade-unions. The progress of legislation and judicial decisions affecting this class of organizations is also recorded. Statistics of membership are not given.

RECENT UNOFFICIAL PUBLICATIONS RELATING TO LABOR.

ACTUARIAL SOCIETY OF AMERICA. *Transactions. Vol. XVI, part 1, No. 53, May 20 and 21, 1915. 256 pp.*

Contains in addition to other material, papers on the following subjects: "Should we prepare a new mortality table"; "Valuation of death benefits provided by the workmen's compensation law of New York"; "A staff pension fund."

— — — *Vol. XVII, part 1, No. 55, May 18 and 19, 1916. 193 pp.*

In addition to other material, contains papers on mortality experience of Mutual Life Insurance Company of New York and of Worcester Fire Society, and a statement concerning the tentative plans for a new mortality investigation by the actuarial society with rules and instructions relating thereto.

AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS. *Proceedings of general council, Manchester, England, June-August, 1916. 120 pp.*

— *Fifty-sixth annual report, 1915. 228 pp.*

AMERICAN COTTON MANUFACTURERS' ASSOCIATION. *Proceedings of twentieth annual convention, Atlanta, Ga., April 4 and 5, 1916. 160 pp.*

AMERICAN FLINT GLASS WORKERS UNION. *Proceedings of thirty-ninth convention, Columbus, Ohio, July, 1915. 321 pp. Proceedings of fortieth convention, Tiffin, Ohio, July, 1916, 284 pp.*

AMERICAN GAS INSTITUTE. *Report of committee on analysis of accidents. Presented at eleventh annual meeting, October, 1916, by James B. Douglas, chairman. 6 pp. (See p. 26.)*

AMERICAN IRON AND STEEL INSTITUTE. *Annual statistical report for 1915. New York, 1916. 96 pp.*

— *Yearbook, 1915. 571 pp.*

AMERICAN MINE SAFETY ASSOCIATION. *Second annual transactions, constitution, and by-laws. Philadelphia, January, 1915. 132 pp.*

AMERICAN MINING CONGRESS. *Report of proceedings of eighteenth annual session, San Francisco, September 20-22, 1915. 192 pp.*

AMERICAN PAPER AND PULP ASSOCIATION. *Thirty-ninth annual convention. New York, February, 1916. (In Paper Trade Journal, vol. 62, No. 7, February 17, 1916. pp. 241-329.)*

AMERICAN PRISON ASSOCIATION. *Proceedings of the annual congress, Oakland, Cal., October 9-14, 1915.* 436 pp.

BIRGE, WILLIAM S. *True food values and their low costs, or economy in living.* New York, Sully & Kleinteich, 1916. 218 pp. Price, 50 cents.

The object of the author is to give such information as may enable the ordinary individual to simplify the art of living and get his money's worth.

BOGART, EBNES L., AND THOMPSON, C. M. *Readings in the economic history of the United States.* New York, Longmans, Green & Co., 1916. 862 pp. Net price, \$2.80.

Designed to provide college classes with collateral reading on the economic history of the United States. Treats of agriculture, manufactures, tariffs, commerce, transportation, money and banking, labor, and movement of the population, and covers the period from 1607 to 1915.

BOWERS, EDWIN F. *Alcohol, its influence on mind and body.* New York, Clode, 1916. 207 pp.

Contains chapters relating to alcohol and accidents, efficiency as related to alcohol, and what industry thinks of alcohol.

BROOKLYN BUREAU OF CHARITIES. *Thirty-sixth annual report. Family and social welfare work.* 1914-1915. 127 pp.

— Tenement house committee. *The progress of housing reform in Brooklyn.* Report, 1916. 47 pp.

BROTHERHOOD OF LOCOMOTIVE FIREMEN AND ENGINEMEN. *Constitution, revised and amended.* Washington, D. C., June and July, 1913. 196 pp.

BROTHERHOOD OF RAILROAD TRAINMEN. *Constitution and general rules, amended.* Detroit, Mich., May to June, 1916. 151 pp.

BROTHERHOOD OF RAILWAY CARMEN OF AMERICA. *Constitution revised.* Milwaukee, Wis., September, 1913. 84 pp.

BUREAU OF RAILWAY ECONOMICS. *List of references relating to the eight-hour working-day, October 19, 1916.* 29 typewritten pages.

CARMAN, FRANCIS A. *Canadian Government annuities. A study of our relation to the problem of poverty in old age.* New York, Ginn & Co., 1915. Reprinted from *Political Science Quarterly*, Vol. XXX, No. 3, September, 1915. pp. 425-447.

COAL AGE. "Safety First" number, October 7, 1916. pp. 567-632.

COLORADO FUEL & IRON CO., *Twenty-fourth annual report for the year ended June 30, 1916.* Denver, 1916. 13 pp.

COMPTON, WILSON. *The organization of the lumber industry.* Chicago, American Lumberman, 1916. 153 pp.

This study is principally concerned with the special influences which have determined the price of lumber in the United States.

CONFERENCE COMMITTEE OF MANAGERS. (*Railroads of western territory*). *Preliminary report of conference committee of managers appointed by the Association of Western Railways to represent certain railways in conference with the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, February 9 to June 1, 1914.* 163 pp.

— — Supplement A. *Preliminary report of conference committee.* July 14 to 18, 1914. 9 pp.

— — Supplement B. *Preliminary report of conference committee.* July 20 to August 3, 1914. 35 pp.

— — *Interpretation of western arbitration award as applied to certain questions and answers of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen.* Chicago, July 1, 1915. 42 pp.

CONGDON, LEON A. *Fight for food*. Philadelphia, Lippincott, 1916, 207 pp.

The author undertakes to show how to provide nourishing diet at low cost in order to meet the problem of the high cost of living.

CONSUMERS' LEAGUE OF CINCINNATI (OHIO) (30 Pickering Building). *Bulletin No. 4. A study of restaurant kitchens*. November, 1916. 10 pp.

CRAIG, E. M. (Compiler). *Rates of wages per hour being paid in the building trades, July 1, 1916*. 808 Chamber of Commerce Building, Chicago, Ill.

A tabulation in chart form of wage rates in the building trades in 68 States of the United States and Canada, compiled by the secretary of the Chicago Builders' Association.

DUBLIN, LOUIS I., of the Metropolitan Life Insurance Co., New York. *Improvement of statistics of cause of death through supplementary inquiries to physicians*. Reprinted from *Quarterly Publications of the American Statistical Association*, June, 1916. Pp. 175 to 191.

— *Interest of the community in cancer*. Read before the New York Academy of Medicine, in association with the American Society for the Control of Cancer. May 18, 1916. 10 pp.

— *Mortality from external causes among industrial policyholders of the Metropolitan Life Insurance Co., 1911 to 1914*. Read at the fifth meeting of the Casualty, Actuarial, and Statistical Society of America, February 25, 1916. Reprinted from the *Proceedings of the Society*, vol. II, Part II, No. 5. Pp. 187-194.

— *Occupational mortality experience of 94,269 industrial workers*. 1916. 6 pp. Reprinted from *American Journal of Public Health*, Boston, vol. 6, No. 7.

FIRST-AID HANDBOOKS:

ALEXANDER, MAGNUS W. *Safety in the foundry*. National Founders' Association. Chicago, 1915. 187 pp.

BAUER & BLACK. *A handbook of first aid in accidents, emergencies, poisoning, sunstroke, etc.* Chicago and New York, 1915. 128 pp.

BOOHER, JAMES M. *Mechanical respiration; historical, physiological, technical*. Life Saving Devices Co., Chicago [1916]. 36 pp.

A pamphlet by the medical director of the Life Saving Devices Co., treating of drowning, electric shock, gas poisoning, etc.

CARNEGIE STEEL CO. *Standardization, surgical technique*. Rules for surgeons. 11 pp.

ELIASON, ELDRIDGE L. *First aid in emergencies*. Lippincott, Philadelphia and London, 1915. 204 pp.

HALDY, W. E. *First-aid practice for factory dispensaries, with some health hints for industrial workers*. 1914. 95 pp.

Prepared for the general service department of the national lamp works of the General Electric Co.

JOHNSON'S *First-Aid Manual*. *Suggestions for prompt aid to the injured in accidents and emergencies*. Johnson & Johnson, New Brunswick, N. J., 1912. 143 pp.

LYNCH, CHARLES. *American National Red Cross text book on first aid and relief columns*. Blakiston, Philadelphia, 1916. 247 pp. Price, \$1.

— *American Red Cross abridged text book on first aid*. Industrial edition. Blakiston, Philadelphia. Reprint, 1916. 175 pp. Price, 30 cents.

— — — *General edition*. Reprint, 1916. 183 pp. Price, 30 cents.

— — — *Miners' edition*. 186 pp. Price, 30 cents.

— — — *Railroad edition*. 150 pp. Price, 30 cents.

— — — *Carnegie Steel Co.* 130 pp.

FIRST-AID HANDBOOKS—Concluded.

- SABLE, DANIEL E. *Vest pocket first aid and safety first.* (English.) National First Aid Publishing Co., Pittsburgh. 1915. 104 pp.
- WELLS, ERNEST A. *Emergency medical and surgical aid. What to do and what not to do.* Aetna Life Insurance Co., Hartford, Conn. 1911. 48 pp.
- WISCONSIN INDUSTRIAL COMMISSION. *First aid. A handbook for use in shops.* December 1, 1914. 28 pp.
- FRICK, H. C., COKE CO. *Safety first.* (English.) 1916. 26 pp.
A book of precepts and instructions for underground workers in coal mines.
- GILBERT, ELEANOR. *The ambitious woman in business.* New York, Funk & Wagnalls. 1916. 393 pp. Price, \$1.50.
- GRAND INTERNATIONAL BROTHERHOOD OF LOCOMOTIVE ENGINEERS. *Constitution and statutes, revised.* Cleveland, Ohio, May, 1915. 157 pp.
- HAINES, EMILY L. *Occupation as a remedial factor in hospitals for the mentally sick.* Massachusetts Society for Mental Hygiene. Publication No. 13. 1916. 8 pp. Reprinted from Boston Medical and Surgical Journal, April 27, 1916.
- HART, SCHAFFNER & MARX. *Board of arbitration. The Hart, Schaffner & Marx labor agreement, by J. E. Williams, Chicago.* 1916. 41 pp.
A compilation and codification of the agreements of 1911, 1913, and 1916, and decisions rendered by the board of arbitration.
- HONOLULU SOCIAL SURVEY. *Report of committee on the social evil.* May, 1914. 40 pp.
- HULL HOUSE YEARBOOK. *Chicago, January 1, 1916.* 64 pp. Price, 10 cents.
Presents not only the current activities of this institution, but also a brief historical account of the foundation and development of each department.
- IHLDER, JOHN. *The houses of Providence.* Providence, R. I. 1916. 96 pp.
- INSTITUT INTERNATIONAL DE STATISTIQUE. *Annuaire international de statistique. I. Etat de la population (Europe).* 1916. 116 pp.
Report of the permanent office of the International Institute of Statistics on the condition of the population in Europe.
- INTERNATIONAL ASSOCIATION OF CASUALTY AND FIRE UNDERWRITERS. *Fifth convention, Detroit, August 24-27, 1915.* 180 pp.
- INTERNATIONAL ASSOCIATION OF MACHINISTS. *Proceedings of fifteenth convention. Baltimore, June 26-July 8, 1916.* 157 pp.
- INTERNATIONAL LONGSHOREMEN'S ASSOCIATION. *Proceedings of the twenty-third annual convention. Cincinnati, November 8, 1915.* 199 pp.
- INTERNATIONAL SLATE AND TILE ROOFERS' UNION OF AMERICA. *Report of proceedings of eleventh annual convention. Pittsburgh, June 5 to 9, 1916.* 36 pp.
- JOINT BOARD OF SANITARY CONTROL IN THE CLOAK, SUIT, AND SKIRT INDUSTRIES. *Six years' work and progress. An experiment in industrial self-control. October 31, 1910, to October 31, 1916.* 32 pp.
- JOINT CONFERENCE OF COAL OPERATORS AND COAL MINERS OF THE CENTRAL COMPETITIVE FIELD, WESTERN PENNSYLVANIA, OHIO, INDIANA, AND ILLINOIS. *Mobile, Ala., February 8, 1916, and New York, February 24, 1916.* 506 pp.
- KENT, A. F. STANLEY. *Second interim report on industrial fatigue.* London, 1916. 76 pp.
For review of this report see p. 97.
- LOCOMOTIVE ENGINEERS' MUTUAL LIFE AND ACCIDENT INSURANCE ASSOCIATION, AND ACCIDENT AND INDEMNITY INSURANCE. *Report and financial statement. Cleveland, Ohio, June 30, 1916.* 21 pp.

MACDONALD DIRECTORY OF LABOR ORGANIZATIONS, CHICAGO AND VICINITY, 154 West Randolph Street, Chicago. 1916. 64 pp. Price, \$5.

Contains official wage scales of Chicago trade-unions, 1916; also revised basis for pricing extra work in certain trades.

MANCHESTER, H. H. *The story of silk and Cheney silk.* New York, 1916. 63 pp.

Contains some account of the processes of silk manufacture.

MINE INSPECTORS' INSTITUTE OF THE UNITED STATES OF AMERICA. *Minutes of ninth annual meeting, Joplin, Mo., June 13-15, 1916.* 115 pp.

MINNESOTA AGRICULTURAL EXPERIMENT STATION. *Bulletin 57 (labor requirements of crop production), March, 1916.* 55 pp.

Shows the actual labor requirements of farm crops in terms of hours per acre worked by man and by horse to produce various crops.

NATIONAL ASSOCIATION OF COTTON MANUFACTURERS. *Transactions at the annual meeting, Boston, April 26-27, 1916.* 423 pp.

NATIONAL ASSOCIATION OF MANUFACTURERS. *Proceedings of twenty-first annual convention, New York City, May 15-17, 1916.* 340 pp.

Among the suggestions of committee reports, addresses, and discussions were accident prevention and workmen's compensation, industrial betterment (including minimum wage and sickness insurance), industrial education, and union label.

NATIONAL ASSOCIATION OF MERCHANT TAILORS OF AMERICA. *Official record of the seventh annual convention.* St. Louis, Mo., February 8-10, 1916. 77 pp.

NATIONAL COMMITTEE FOR THE PREVENTION OF BLINDNESS. *First annual report, including seventh annual report of New York State committee for the prevention of blindness.* New York, November, 1915. 56 pp.

NATIONAL FIRE PROTECTION ASSOCIATION (UNITED STATES AND CANADA). *Year-book, August, 1916.* 147 pp.

NEARING, SCOTT. *Poverty and riches.* Philadelphia, Winston, 1916. 261 pp.

NEDERLANDSCH VERBOND VAN VAKVEREENINGEN. *Zevende verslag van den toestand en de verrichtingen. Januari 1914 tot 31 December 1915.* 209 pp.

Seventh report of the operations of the Netherland Association of Trade Unions.

NOLEN, JOHN. *More houses for Bridgeport. Report to Bridgeport, Conn., Chamber of Commerce.* Cambridge, Mass., 1916. 62 pp.

ORDER OF RAILROAD TELEGRAPHERS. *Constitution revised and amended.* St. Louis, Mo., May, 1915. 128 pp.

ORDER OF RAILWAY CONDUCTORS. *Constitution, statutes, rules of order, and laws governing the mutual benefit department. Revised and adopted.* St. Louis, May 8, 1916. 142 pp.

PASSAIC, N. J., BOARD OF TRADE. *Survey of housing conditions in Passaic, March to May, 1915. Prepared for the housing committee of Passaic Board of Trade by Udetta D. Brown, with recommendations prepared by John Ihlder, field secretary, National Housing Association.* 48 pp.

PEASE, EDWARD R. *The history of the Fabian Society, London, Fifield, 1916.* 288 pp.

An account of the origin of the society and its activities during the 30 years of its existence.

PHILADELPHIA BUREAU OF MUNICIPAL RESEARCH. *Comparative salary data, March 1, 1916.* 76 pp. Price, 75 cents.

The data here shown were obtained from the pay rolls of 14 cities in the United States, 48 private establishments in Philadelphia, and from the salary standardizations of 7 American cities.

POST, LOUIS F. *Ethics of democracy. Third edition. Indianapolis, Bobbs Merrill, 1916. 374 pp.*

Essays by the assistant secretary of the United States Department of Labor, covering a wide range of public questions—labor, trusts, single tax, etc.

PROUD, E. DOROTHEA. *Welfare work; employers' experiments for improving working conditions in factories. London, Bell, 1916. 363 pp.*

For review of this volume see p. 81.

PUBLIC SERVICE CORPORATION OF NEW JERSEY. *Welfare committee. Fifth annual report, 1915. 33 pp.*

Deals with the cost of the welfare plan, and gives information regarding accidents, cases handled, employees in service, insurance, deaths by causes and by occupations, sick benefits and causes of disability, and compensation cost of accidents according to occupations and causes.

ROBINSON, CHARLES M. *City planning. New York, Putnam, 1916. 344 pp. Price, \$2.50.*

RUBIN, W. B. *The toiler in Europe. Cincinnati, Rosenthal, 1916. 362 pp.*

This book, published under the auspices of the International Molders' Union of North America, is intended to be a "popular psychological insight into European labor conditions."

ROSE, MARY S. *Feeding the family. New York, Macmillan, 1916. 449 pp.*

A nontechnical account of the way in which modern knowledge of the science of nutrition may be applied in ordinary life. The food needs of different members of the family group are discussed in separate chapters, and many concrete illustrations of food plans and dietaries are given.

RUSSELL SAGE FOUNDATION. *Community action through surveys, by Shelby M. Harrison, director, department of service and exhibits. September, 1916. 29 pp.*

A paper presented at the Indianapolis meeting of the National Conference of Charities and Corrections, May, 1916.

SPRINGFIELD SURVEY. *Care of mental defectives, the insane, and alcoholics in Springfield, Ill. A study of the National Committee for Mental Hygiene, by W. L. Treadway. New York, Russell Sage Foundation, 1914. 466 pp.*

TORONTO BUREAU OF MUNICIPAL RESEARCH. *A living wage. Report, 1915. 14 pp.*

TRADES AND LABOR CONGRESS OF CANADA. *Proceedings of thirty-second annual convention, Toronto, September 25-30, 1916. 200 pp.*

UNDERWRITERS' LABORATORIES. *List of inspected mechanical appliances, July, 1916. 84 pp.*

This list includes (1) fire appliances, (2) gas, oil, and chemical appliances, and (3) safety appliances, the names of firms manufacturing articles which, as a result of examination and test of samples, have received the approval of the laboratories, and are, therefore, permitted to bear its labels. The list also includes certain products of classes at present not included in the system of inspection and labeling at factories, these appearing under trade numbers, catalog numbers, or otherwise.

WERGELAND, AGNES M. *A history of the working classes in France. Chicago, University of Chicago Press, 1916. 136 pp.*

A review of Levasseur's history of the working classes and of industry in France before 1789.

WOMEN'S INDUSTRIAL COUNCIL. *Domestic service, by C. V. Butler. London, Bell, 1916. 148 pp.*

This bulletin is based on schedules from employers and servants. It treats of the personal and industrial aspect of domestic service, methods of training, employment agencies, and other related subjects.

WOMEN'S MUNICIPAL LEAGUE OF BOSTON. *Department of housing. Housing conditions of to-day in Boston. Bulletin, February, 1916. 79 pp.*

YOUNG MEN'S CHRISTIAN ASSOCIATION. *Proceedings of the thirty-ninth international convention, Cleveland, Ohio, 1916. 398 pp.*

In connection with other topics considered, addresses were made on the spiritual forces creating and solving modern industrial problems, and the untouched fields and latent forces in industry and commerce and also among immigrants. The permanent committee on vocational training made a report which is discussed at length.

ZENTRALSTELLE SCHWEIZERISCHER ARBEITSÄMTER. 11. *Geschäftsbericht, 1915. 36 pp.*

Eleventh report of the operations of the central office of Swiss labor bureaus.

SERIES OF BULLETINS PUBLISHED BY THE BUREAU OF LABOR STATISTICS.

[The publication of the Annual and Special Reports and of the bimonthly Bulletin has been discontinued, and since July, 1912, a Bulletin has been published at irregular intervals. Each number contains matter devoted to one of a series of general subjects. These Bulletins are numbered consecutively in each series and also carry a consecutive whole number, beginning with No. 101. A list of the series, together with the individual Bulletins falling under each, is given below. A list of the Reports and Bulletins of the Bureau issued prior to July 1, 1912, will be furnished on application.]

Wholesale Prices.

- No. 1. Wholesale prices, 1890 to 1912. (Bul. 114.)
- No. 2. Wholesale prices, 1890 to 1913. (Bul. 149.)
- No. 3. Index numbers of wholesale prices in the United States and foreign countries. (Bul. 173.)
- No. 4. Wholesale prices, 1890 to 1914. (Bul. 181.)
- No. 5. Wholesale prices, 1890 to 1915. (Bul. 200.)

Retail Prices and Cost of Living.

- No. 1. Retail prices, 1890 to 1911: Part I. (Bul. 105: Part I.)
Retail prices, 1890 to 1911: Part II—General tables. (Bul. 105: Part II.)
- No. 2. Retail prices, 1890 to June, 1912: Part I. (Bul. 106: Part I.)
Retail prices, 1890 to June, 1912: Part II—General tables. (Bul. 106: Part II.)
- No. 3. Retail prices, 1890 to August, 1912. (Bul. 108.)
- No. 4. Retail prices, 1890 to October, 1912. (Bul. 110.)
- No. 5. Retail prices, 1890 to December, 1912. (Bul. 113.)
- No. 6. Retail prices, 1890 to February, 1913. (Bul. 115.)
- No. 7. Sugar prices, from refiner to consumer. (Bul. 121.)
- No. 8. Retail prices, 1890 to April, 1913. (Bul. 125.)
- No. 9. Wheat and flour prices, from farmer to consumer. (Bul. 130.)
- No. 10. Retail prices, 1890 to June, 1913. (Bul. 132.)
- No. 11. Retail prices, 1890 to August, 1913. (Bul. 136.)
- No. 12. Retail prices, 1890 to October, 1913. (Bul. 138.)
- No. 13. Retail prices, 1890 to December, 1913. (Bul. 140.)
- No. 14. Retail prices, 1907 to December, 1914. (Bul. 156.)
- No. 15. Butter prices, from producer to consumer. (Bul. 164.)
- No. 16. Retail prices, 1907 to June, 1915. (Bul. 184.)
- No. 17. Retail prices, 1907 to December, 1915. (Bul. 197.)

Wages and Hours of Labor.

- No. 1. Wages and hours of labor in the cotton, woolen, and silk industries, 1890 to 1912. (Bul. 128.)
- No. 2. Wages and hours of labor in the lumber, millwork, and furniture industries, 1890 to 1912. (Bul. 129.)
- No. 3. Union scale of wages and hours of labor, 1907 to 1912. (Bul. 131.)
- No. 4. Wages and hours of labor in the boot and shoe and hosiery and knit goods industries, 1890 to 1912. (Bul. 134.)
- No. 5. Wages and hours of labor in the cigar and clothing industries, 1911 and 1912. (Bul. 135.)
- No. 6. Wages and hours of labor in the building and repairing of steam railroad cars, 1890 to 1912. (Bul. 137.)
- No. 7. Union scale of wages and hours of labor, May 15, 1913. (Bul. 143.)
- No. 8. Wages and regularity of employment in the dress and waist industry of New York City. (Bul. 146.)
- No. 9. Wages and regularity of employment in the cloak, suit, and skirt industry. (Bul. 147.)
- No. 10. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1913. (Bul. 150.)
- No. 11. Wages and hours of labor in the iron and steel industry in the United States, 1907 to 1912. (Bul. 151.)
- No. 12. Wages and hours of labor in the lumber, millwork, and furniture industries, 1907 to 1913. (Bul. 153.)
- No. 13. Wages and hours of labor in the boot and shoe and hosiery and underwear industries, 1907 to 1913. (Bul. 154.)
- No. 14. Wages and hours of labor in the clothing and cigar industries, 1911 to 1913. (Bul. 161.)
- No. 15. Wages and hours of labor in the building and repairing of steam railroad cars, 1907 to 1913. (Bul. 163.)
- No. 16. Wages and hours of labor in the iron and steel industry, 1907 to 1913. (Bul. 168.)
- No. 17. Union scale of wages and hours of labor, May 1, 1914. (Bul. 171.)
- No. 18. Wages and hours of labor in the hosiery and underwear industry, 1907 to 1914. (Bul. 177.)
- No. 19. Wages and hours of labor in the boot and shoe industry, 1907 to 1914. (Bul. 178.)
- No. 20. Wages and hours of labor in the men's clothing industry, 1911 to 1914. (Bul. 187.)
- No. 21. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1914. (Bul. 190.)
- No. 22. Union scale of wages and hours of labor, May 1, 1915. (Bul. 194.)
- No. 23. Street railway employment in the United States. (Bul. 204.) [In press.]

Employment and Unemployment.

- No. 1. Proceedings of the American Association of Public Employment Offices. (Bul. 192.)
- No. 2. Unemployment in the United States. (Bul. 195.)
- No. 3. Proceedings of Employment Managers' Conference. (Bul. 196.)
- No. 4. Proceedings of the Conference of Employment Managers' Association of Boston. (Bul. 202.)
- No. 5. The British System of Labor Exchanges. (Bul. 206.)

For material relating to these subjects, but not included in this series, see *Miscellaneous series*, Nos. 1, 10, 12 (Buls. 109, 172, 183).

Women in Industry.

- No. 1. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia. (Bul. 116.)
- No. 2. Working hours of women in the pea canneries of Wisconsin. (Bul. 119.)
- No. 3. Employment of women in power laundries in Milwaukee. (Bul. 122.)
- No. 4. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories. (Bul. 160.)
- No. 5. Summary of the report on condition of woman and child wage earners in the United States. (Bul. 175.)
- No. 6. Effect of minimum-wage determinations in Oregon. (Bul. 176.)
- No. 7. The boot and shoe industry in Massachusetts as a vocation for women. (Bul. 180.)
- No. 8. Unemployment among women in department and other retail stores of Boston, Mass. (Bul. 182.)
- No. 9. Dressmaking as a trade for women. (Bul. 193.)

For material relating to this subject, but not included in this series, see *Miscellaneous series*, Nos. 2, 3, 8 (Buls. 117, 118, 167).

Workmen's Insurance and Compensation (including laws relating thereto).

- No. 1. Care of tuberculous wage earners in Germany. (Bul. 101.)
- No. 2. British National Insurance Act, 1911. (Bul. 102.)
- No. 3. Sickness and accident insurance law of Switzerland. (Bul. 103.)
- No. 4. Law relating to insurance of salaried employees in Germany. (Bul. 107.)
- No. 5. Workmen's compensation laws of the United States and foreign countries. (Bul. 126.)
- No. 6. Compensation for accidents to employees of the United States. (Bul. 155.)
- No. 7. Compensation legislation of 1914 and 1915. (Bul. 185.)
- No. 8. Compensation laws of the United States and foreign countries. (Bul. 203.) [In press.]
- No. 9. Proceedings of the Third Annual Meeting of the International Association of Industrial Accident Boards and Commissions. (Bul. 210.) [In press.]
- No. 10. Proceedings of the conference called by the International Association of Industrial Accident Boards and Commissions. (Bul. 212.) [In press.]

Industrial Accidents and Hygiene.

- No. 1. Lead poisoning in potteries, tile works, and porcelain enameled sanitary ware factories. (Bul. 104.)
- No. 2. Hygiene of the painters' trade. (Bul. 120.)
- No. 3. Dangers to workers from dusts and fumes, and methods of protection. (Bul. 127.)
- No. 4. Lead poisoning in the smelting and refining of lead. (Bul. 141.)
- No. 5. Industrial accident statistics. (Bul. 157.)
- No. 6. Lead poisoning in the manufacture of storage batteries. (Bul. 165.)
- No. 7. Industrial poisons used in the rubber industry. (Bul. 179.)
- No. 8. Report of British departmental committee on danger in the use of lead in the painting of buildings. (Bul. 188.)
- No. 9. Report of committee on statistics and compensation insurance cost of the International Association of Industrial Accident Boards and Commissions. (Bul. 201.) [Limited edition.]
- No. 10. Anthrax as an occupational disease. (Bul. 205.) [In press.]
- No. 11. Causes of death by occupations. (Bul. 207.) [In press.]
- No. 12. Hygiene of the printing trades. (Bul. 209.) [In press.]

Conciliation and Arbitration (including strikes and lockouts).

- No. 1. Conciliation and arbitration in the building trades of Greater New York. (Bul. 124.)
- No. 2. Report of the industrial council of the British Board of Trade on its inquiry into industrial agreements. (Bul. 133.)
- No. 3. Michigan copper district strike. (Bul. 139.)
- No. 4. Industrial court of the cloak, suit, and skirt industry of New York City. (Bul. 144.)
- No. 5. Conciliation, arbitration, and sanitation in the dress and waist industry of New York City. (Bul. 145.)
- No. 6. Collective bargaining in the anthracite coal industry. (Bul. 191.)
- No. 7. Collective agreements in the men's clothing industry. (Bul. 198.)

Labor Laws of the United States (including decisions of courts relating to labor).

- No. 1. Labor legislation of 1912. (Bul. 111.)
- No. 2. Decisions of courts and opinions affecting labor, 1912. (Bul. 112.)
- No. 3. Labor laws of the United States, with decisions of courts relating thereto. (Bul. 148.)
- No. 4. Decisions of courts and opinions affecting labor, 1913. (Bul. 152.)
- No. 5. Labor legislation of 1914. (Bul. 166.)
- No. 6. Decisions of courts affecting labor, 1914. (Bul. 169.)
- No. 7. Labor legislation of 1915. (Bul. 186.)
- No. 8. Decisions of courts affecting labor, 1915. (Bul. 189.)
- No. 9. Labor laws and their administration in the Pacific States. (Bul. 211.) [In press.]
- No. 10. Labor legislation of 1916. (Bul. 213.) [In press.]

Foreign Labor Laws.

- No. 1. Administration of labor laws and factory inspection in certain European countries. (Bul. 142.)

Vocational Education.

- No. 1. Vocational education survey of Minneapolis. (Bul. 199.) [In press.]

For material relating to this subject, but not included in this series, see Wages and hours of labor series, No. 9 (Bul. 147); Conciliation and arbitration series, No. 5 (Bul. 145); Miscellaneous series, Nos. 6, 7 (Buls. 159, 162).

Miscellaneous Series.

- No. 1. Statistics of unemployment and the work of employment offices. (Bul. 109.)
- No. 2. Prohibition of nightwork of young persons. (Bul. 117.)
- No. 3. Ten-hour maximum working-day for women and young persons. (Bul. 118.)
- No. 4. Employers' welfare work. (Bul. 123.)
- No. 5. Government aid to home owning and housing of working people in foreign countries. (Bul. 158.)
- No. 6. Short-unit courses for wage earners and a factory school experiment. (Bul. 159.)
- No. 7. Vocational education survey of Richmond, Va. (Bul. 162.)
- No. 8. Minimum-wage legislation in the United States and foreign countries. (Bul. 167.)
- No. 9. Foreign food prices as affected by the war. (Bul. 170.)
- No. 10. Unemployment in New York City, N. Y. (Bul. 172.)
- No. 11. Subject index of the publications of the United States Bureau of Labor Statistics up to May 1, 1915. (Bul. 174.)
- No. 12. Regularity of employment in the women's ready-to-wear garment industries. (Bul. 183.)
- No. 13. Profit sharing in the United States. (Bul. 208.) [In press.]

